VOL. XXXIII. No. 12 DECEMBER 1948

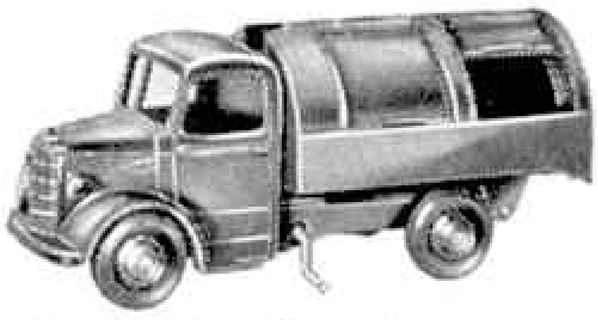
MECCANO MAGAZINE

WHALE FACTORY SHIPS

6D.

DINKY TOYS

Standard "Vanguard" Saloon
No. 40e
Price **1/9** each (including tax)



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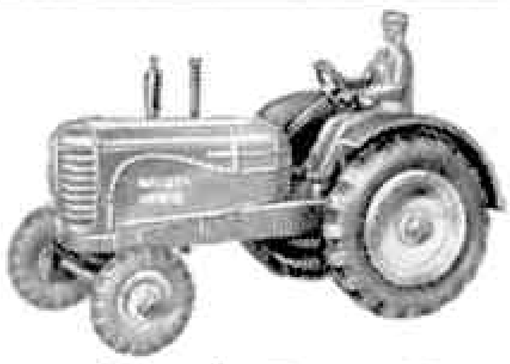

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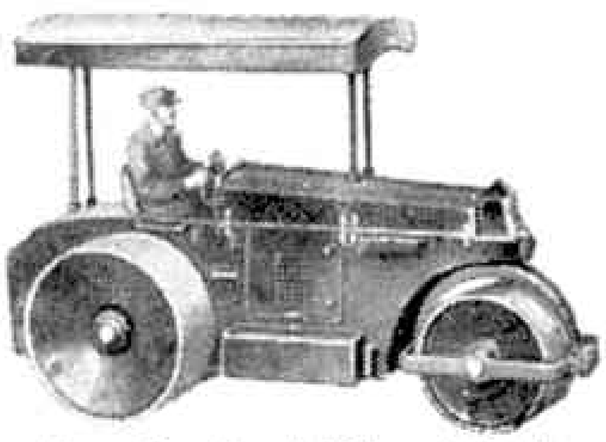

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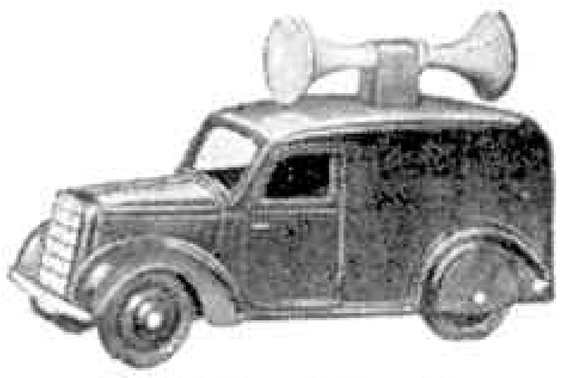

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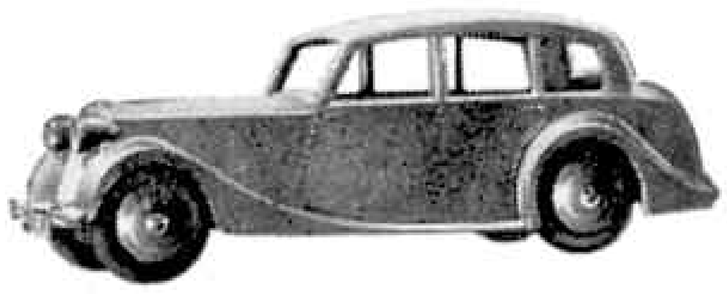

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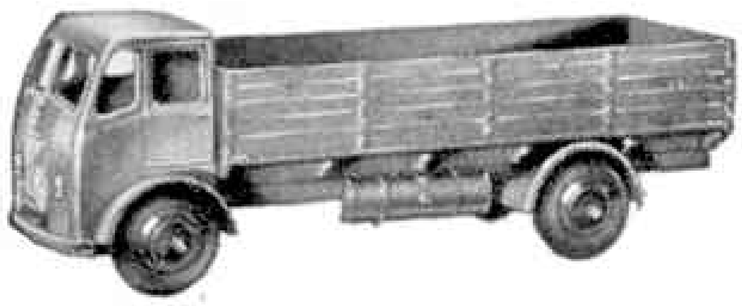

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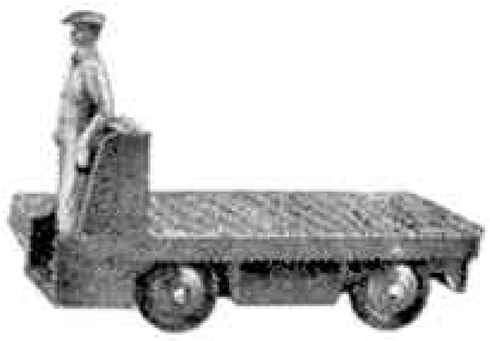

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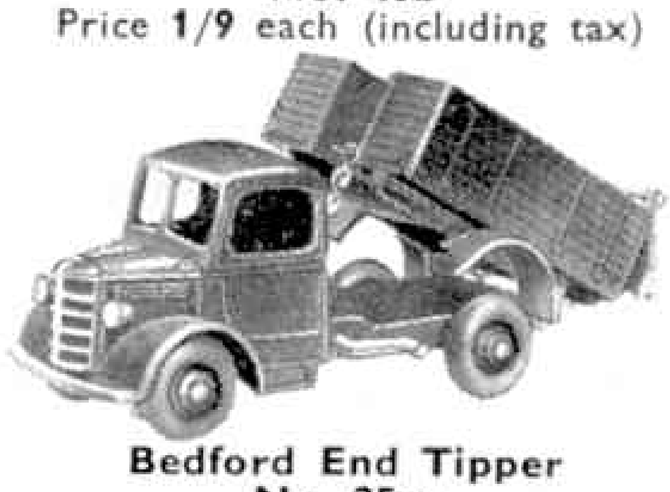

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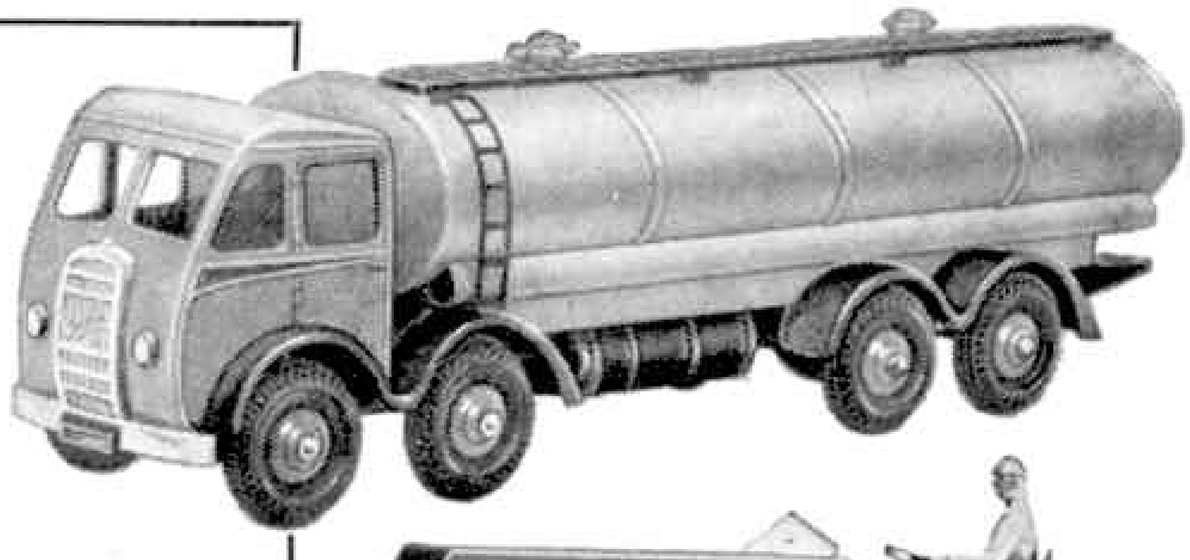

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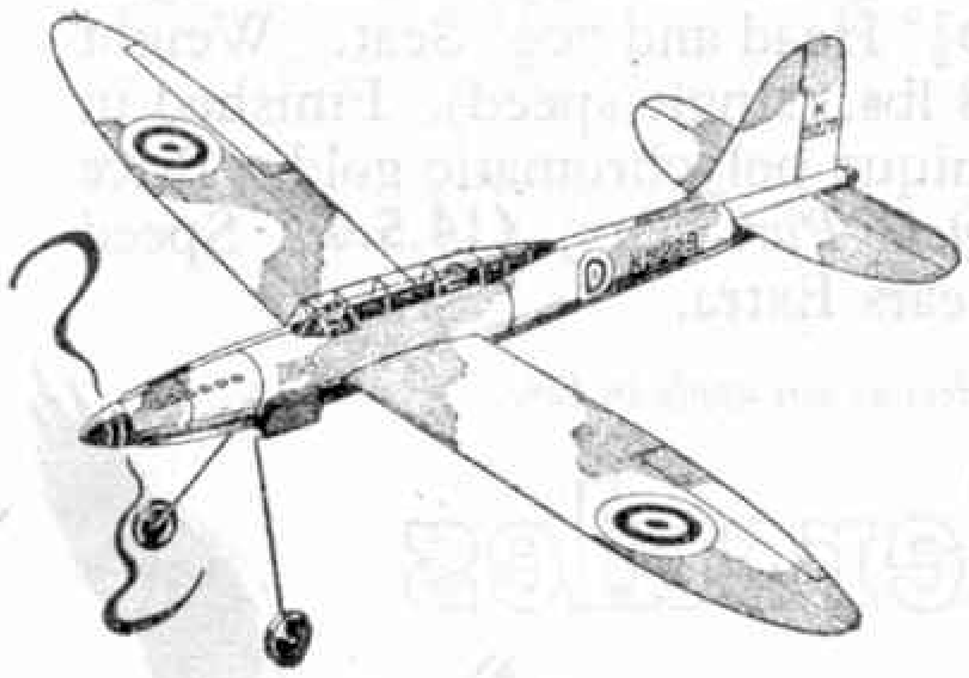

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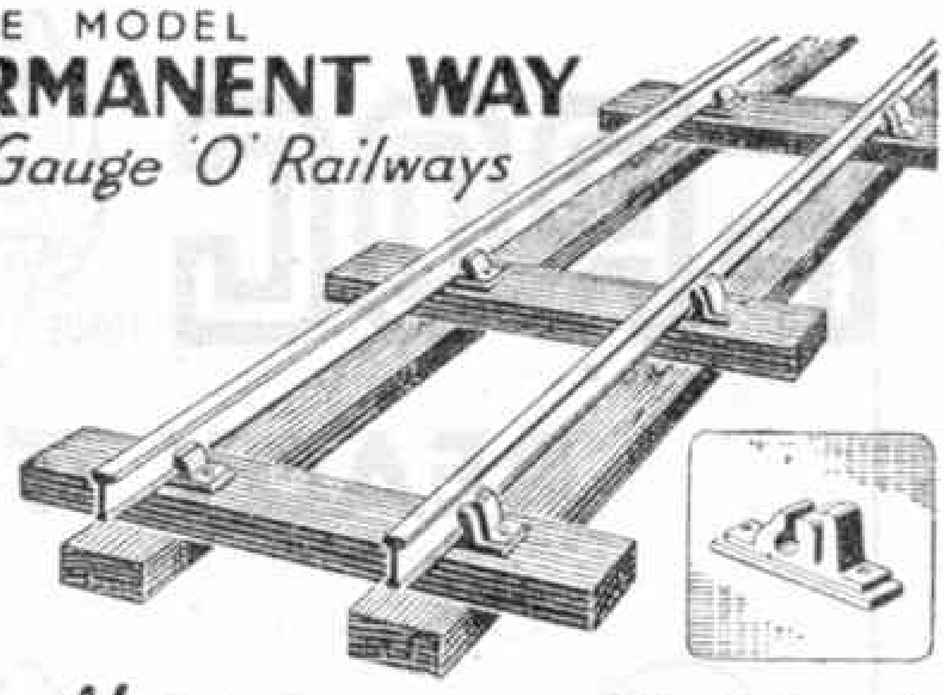

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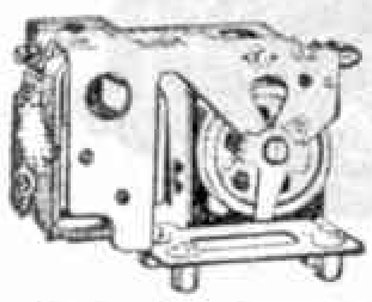

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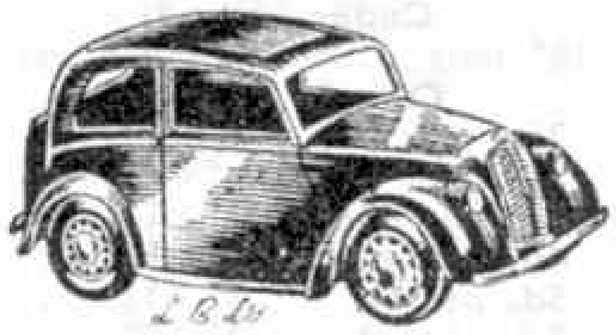

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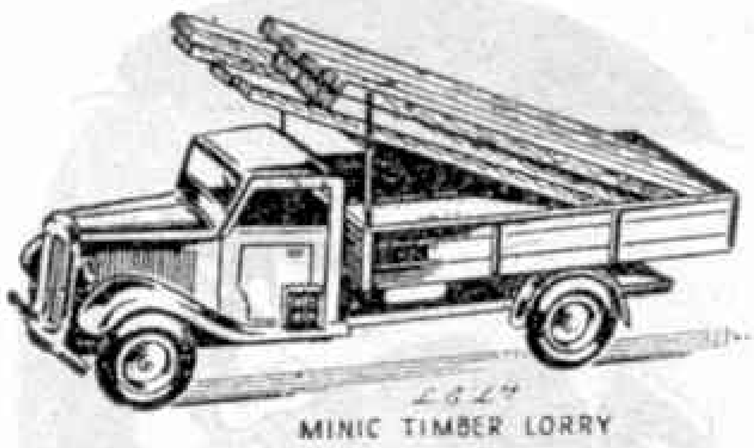

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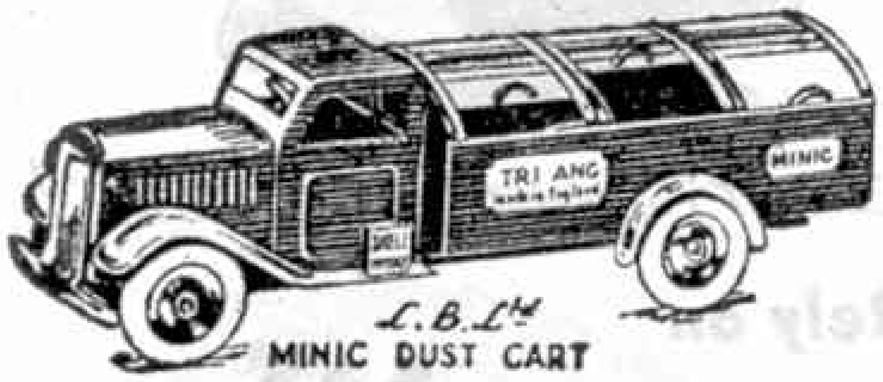

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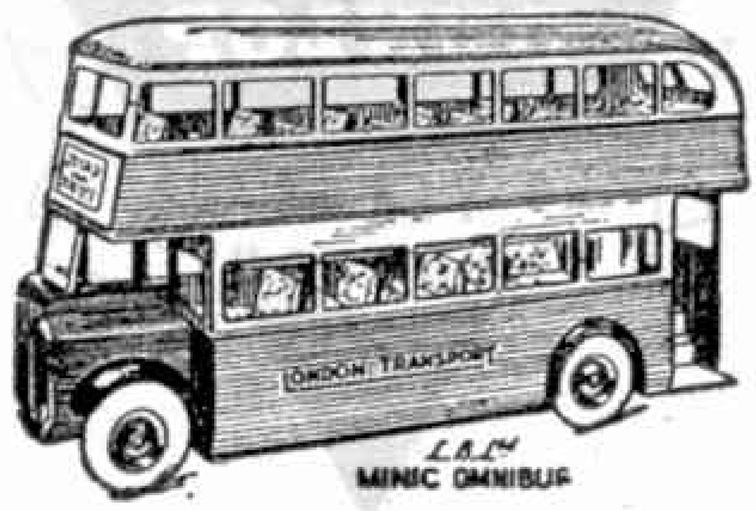

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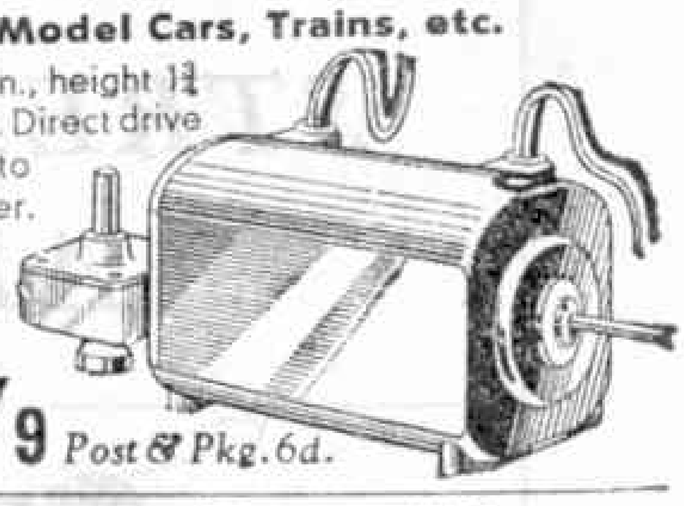

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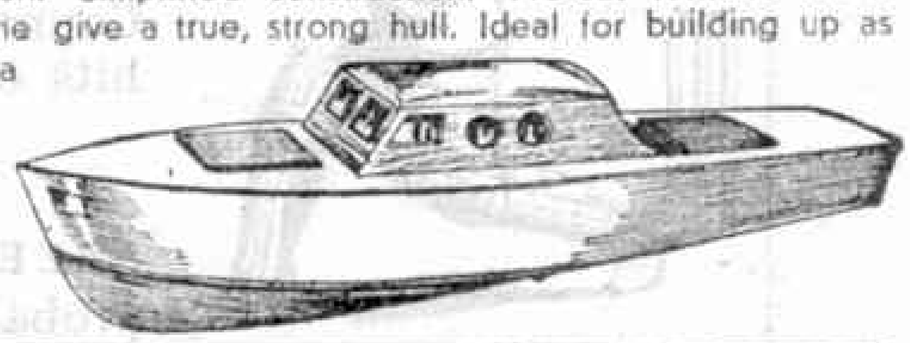

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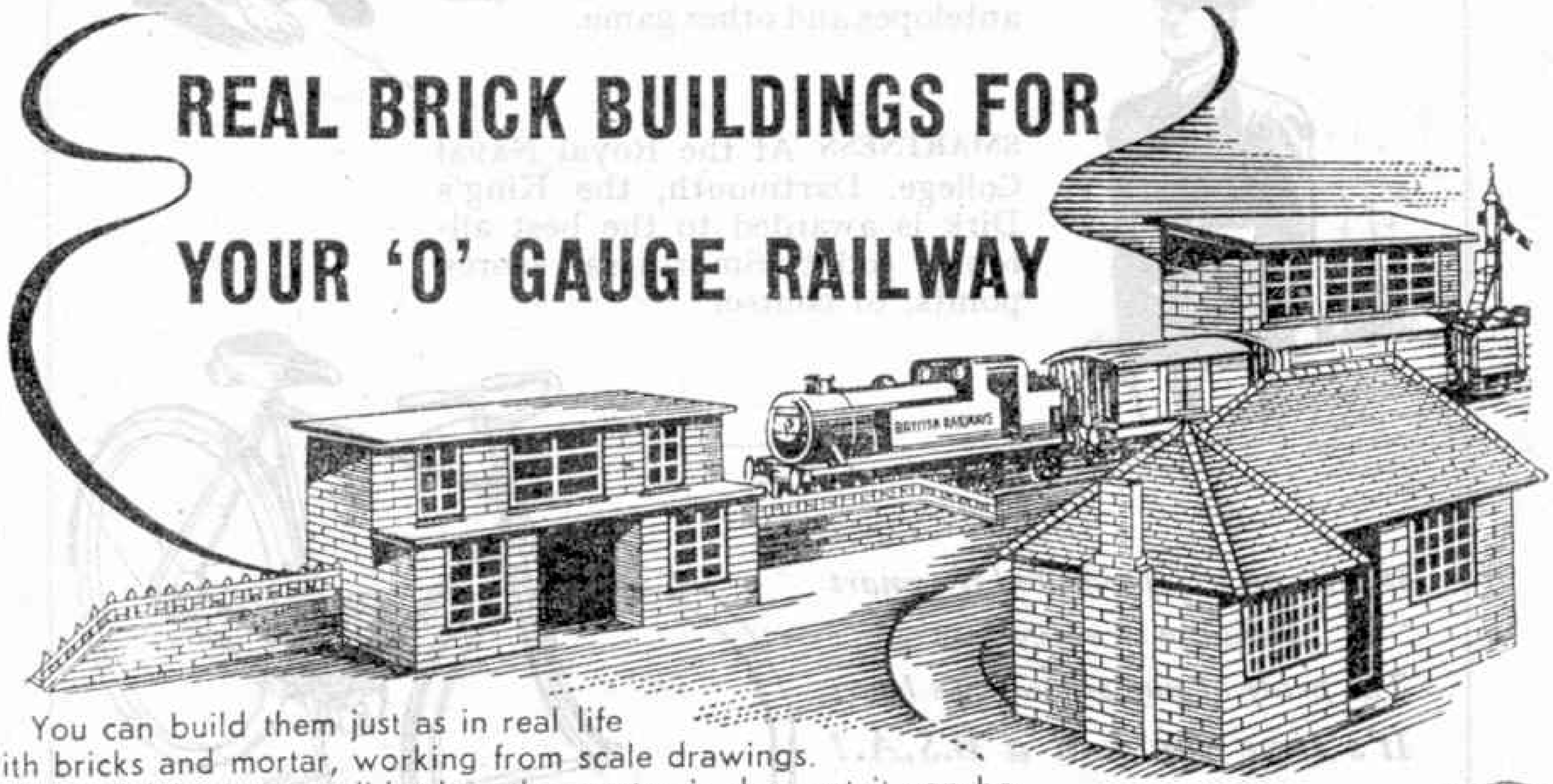

You can build them just as in real life with bricks and mortar, working from scale drawings. Each model becomes solid when the mortar is dry, yet it can be quickly dismantled by soaking in cold water and the bricks used again.

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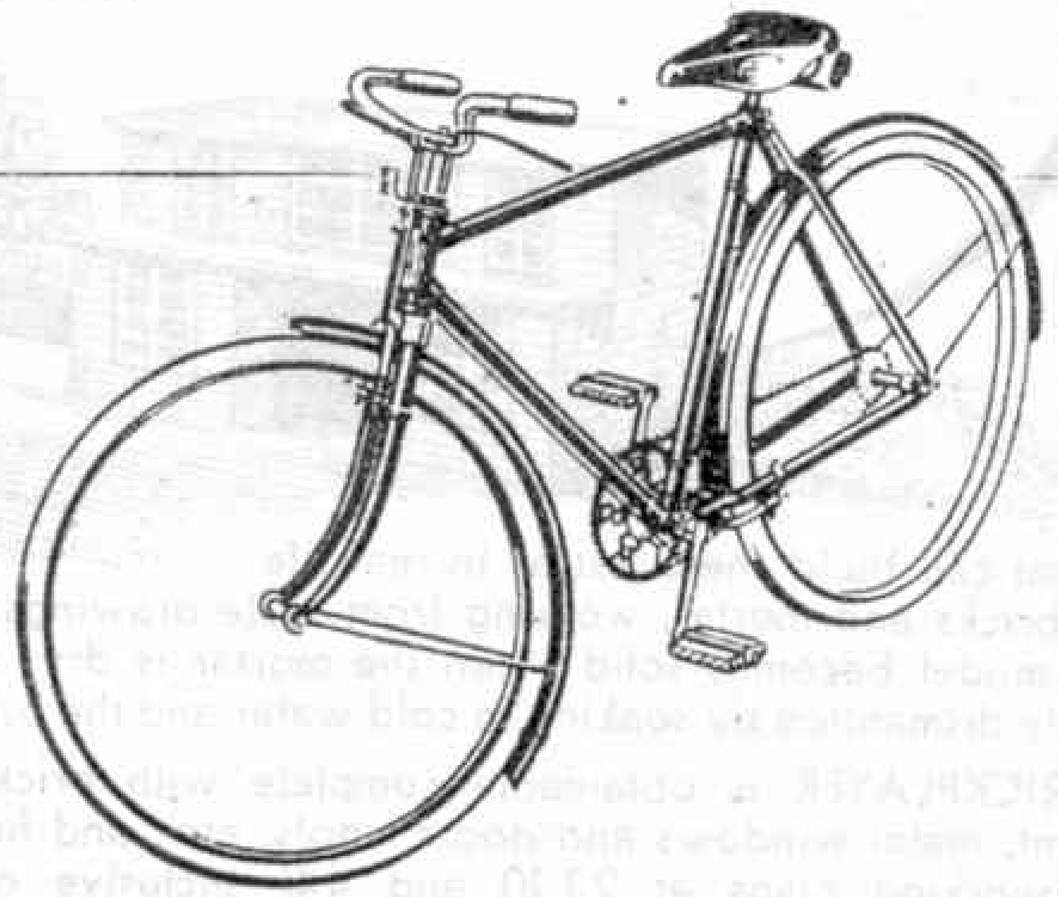
SMARTNESS At the Royal Naval College, Dartmouth, the King's Dirk is awarded to the best all-round cadet. Smartness scores points, of course!



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MECCANO MAGAZINE

Editorial Office:
Binns Road
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Vol. XXXIII
No. 12
December 1948

With the Editor

Locomotive Testing

In this country locomotive tests hitherto have normally been carried out on the ordinary track, by means of a dynamometer car coupled between the engine and its train, or by what are known as "constant speed tests." For many purposes however, it is better to have the locomotive as it were in a laboratory, with the "track" passing under it. This is done by running the locomotive on rollers fitted with rims of a similar profile to that of the ordinary rails. The late Sir Nigel Gresley, Chief Mechanical Engineer of the former L.N.E.R., urged persistently the necessity for a national locomotive testing station, and the result of his efforts was seen on 19th October when the Locomotive Testing Station at Rugby was opened.

The testing plant itself consists of seven pairs of rollers that support the locomotive, and up to five of which are driven by the coupled wheels of the engine. Each of these five pairs of rollers is coupled to a "Froude" hydraulic brake or dynamometer capable of absorbing up to 1200 h.p. and designed for a maximum speed equivalent to 130 m.p.h.

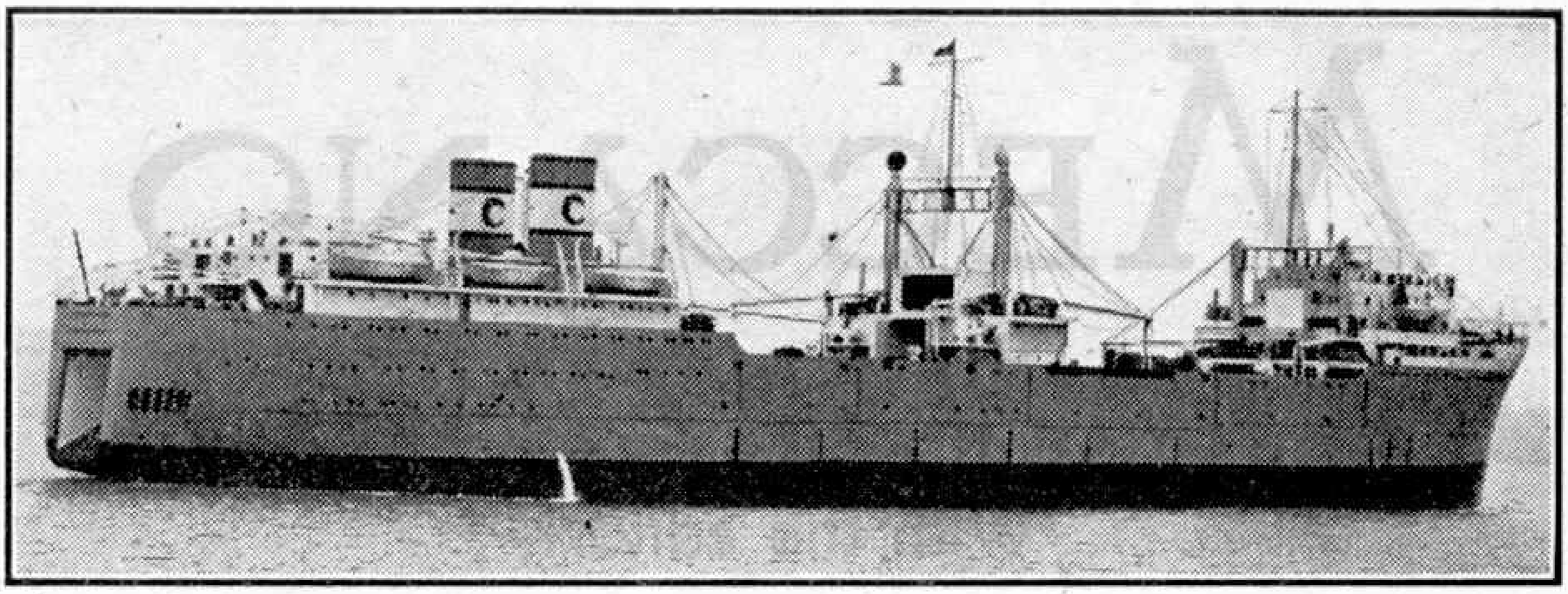
The "Froude" dynamometers are not only used as brakes to control the speed of the locomotive, but are also fitted with arms that transmit the torque load to a spring. The deflection of the spring is transmitted electrically to the Control Room, where the torque transmitted by each driving wheel is indicated as tractive effort at each axle. Measurement of the power of the locomotive is finally made at the drawbar by means of the well-known "Amsler" dynamometer.

Meccano in the Laboratory

Interesting details are given on page 423 of this issue of machines built of Meccano that are used in the laboratories of the Research Department of a well-known firm developing and making plastics. The firm concerned have found that it is possible to erect laboratory apparatus in Meccano as a preliminary "mock-up" which will actually work and demonstrate the correctness or otherwise of the principles used. These "mock-ups" give the necessary information for the construction of full scale plant, and they save weeks of work in the engineering shops. With Meccano it is possible to have an idea and to try it out on the same day; without Meccano the services of the drawing office, the engineering machine shop and the fitting shop would be necessary, perhaps for a week or more, to get the same result.

This Month's Special Articles

	Page
Belfast-Built Whale Factory Ships by Denis Rebbeck, M.A., M.Sc.	414
National Maritime Museum .. by W. J. Bassett-Lowke, M.I.Loco.E.	416
Experience and Versatility in Western Union Air Command .. by C. G. Grey	419
Some Railroad Exhibits at Chicago	420
Meccano in the Laboratory ..	423
Puzzle Your Sharp-Eyed Friends by Norman Hunter	426
Dinky Toys and Supertoys ..	429
The Bells of the Carillon .. .. by Ernest Morris, F.R.Hist.S.	430
What Happens Before the Train Starts? by "Shed Superintendent" ..	433
Parasite 'Planes .. .. .. by John W. R. Taylor	434
Submersible Tractors for Life-Boats	438
Mechanical Surface Excavation Plant by G. Clifton	440



The Whale Factory Ship "Thorshavet."

Belfast-Built Whale Factory Ships

By Denis Rebbeck, M.A., M.Sc., B.Litt., M.I.N.A.

WHEN the keel of the *"Juan Peron"* was laid in Messrs. Harland and Wolff's Belfast shipyards in June of this year there was great excitement, because the *"Juan Peron"* will be the world's largest whale factory ship, and it was fitting that the keel should be laid in the world's largest shipyard. Many famous vessels have been built in the Belfast yards and many strange craft have slid down the ways into the river Lagan; but few ships are stranger than these gigantic floating whale factories, of which no fewer than five will have been built in Belfast when the *"Juan Peron"* has been completed.

The *"Juan Peron"* has been designed for the carriage of some 27,000 tons of whale oil and associated products. She will be about 665 ft. in length overall, and a distinctive feature of her design is the elaborate machinery to be installed for the processing of the whale residue after extraction of the oil, thus ensuring that no part of the carcase is wasted. A separate 'tween decks has been provided for their stowage, arranged with conveyor gear for handling and discharge. The new vessel, which is building for the Compania Argentina de Pesca, will also be able to operate as an ordinary tanker during the whaling close season. She will be propelled by twin-screw Harland B. and W. Diesel engines, a type of prime mover which has proved to be highly satisfactory for the exacting conditions of whaling.

The illustrations on this and the succeeding page show the *"Thorshavet,"* a motor-driven whale factory ship which Messrs. Harland and Wolff built at their Belfast Works for A/s Thor Dahl, the famous Norwegian whalers. This fine vessel was delivered to her owners last autumn after successfully completing her sea trials. The vessel appears also on the front cover of this month's *"M.M.,"* where she is seen beside the *"Balaena,"* another Harland and Wolff factory ship, which was described in the December 1946 *"M.M."*

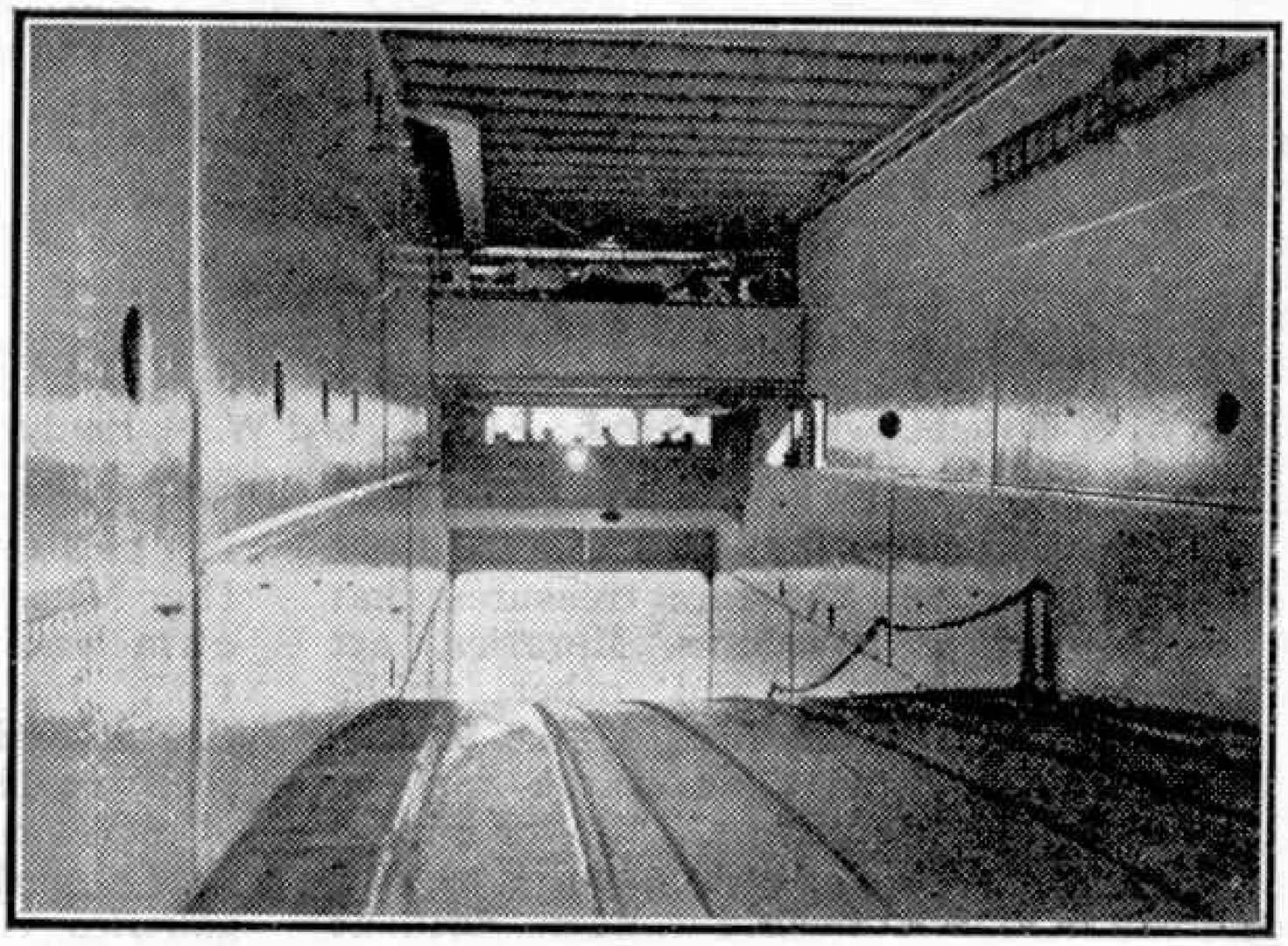
Norway's whaling companies suffered heavily during the War. Seven whale factory ships were sunk and several others severely damaged by bombing, and the *"Thorshavet"* is an important addition to the Norwegian fleets. She is a whale factory ship of the most up-to-date type, and her design embodies the many improvements which have been made in ships of this type since the idea of carrying out pelagic whaling operations from a mobile mothership was first developed about 25 years ago. The modern whale factory makes it unnecessary for the carcases of whales to be landed on Antarctic islands for dismemberment. On the *"Thorshavet,"* whales can be hauled aboard along a skidway from the split stern to the flensing deck, where the carcases will be flensed, cut up and passed to the factory below.

The principal technical particulars of the vessel are: length between perpendiculars 560 ft., breadth moulded 77 ft., depth moulded to flensing deck 56 ft., mean draft Summer freeboard 34 ft. 6 in. and deadweight carrying capacity (approx.) 21,000 tons.

The vessel is built under Lloyd's Special

Survey for their highest classification for vessels carrying oil in bulk with a flash point below 150 deg. F., and also for classification with Norske Veritas.

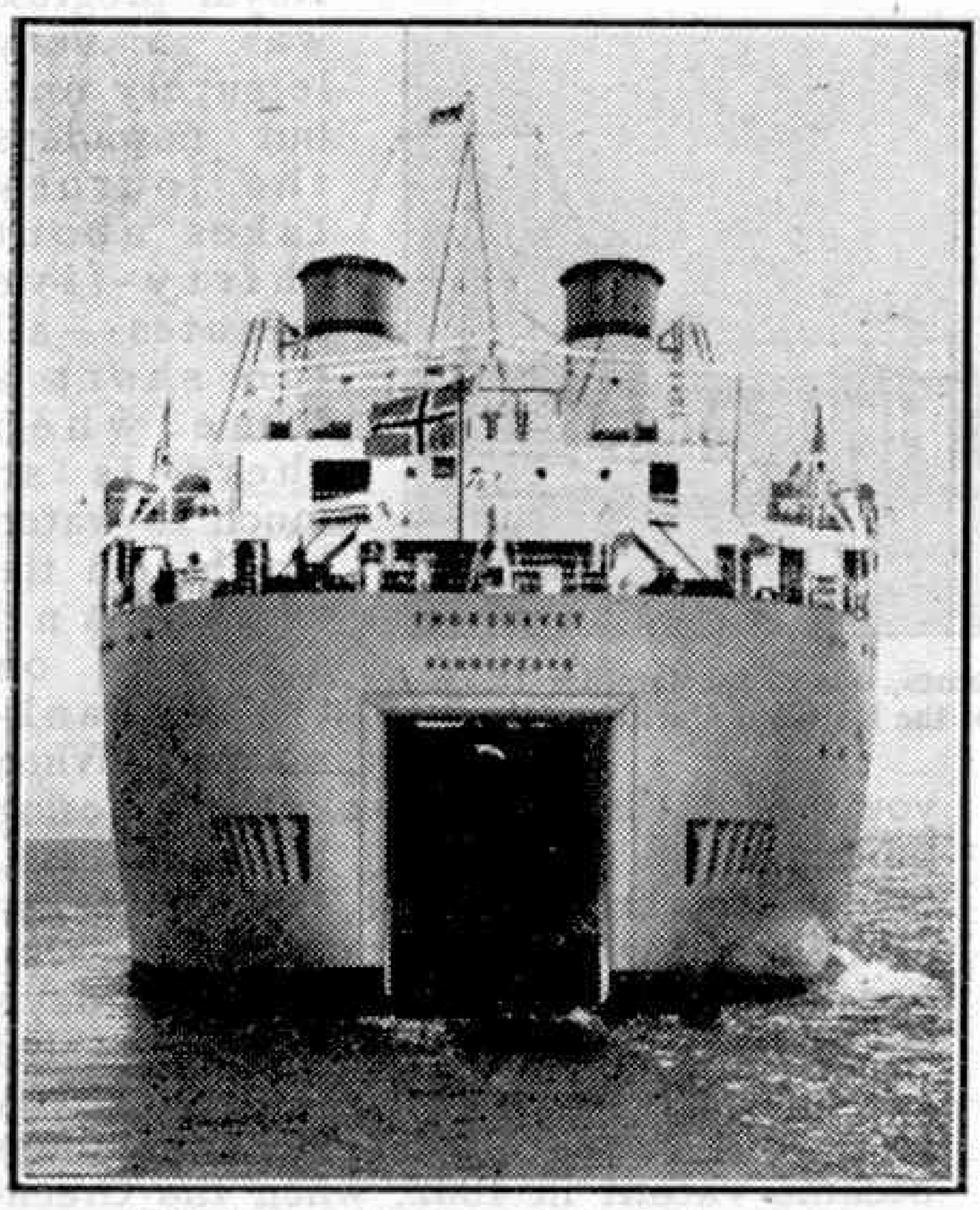
The *"Thorshavet"* is a twin screw motor driven whale oil factory vessel of the two deck type, with poop and upper and lower forecastles, machinery fitted aft, rounded raked stem, cruiser stern with skidway in centre up which the whales are hauled to the flensing deck.



View of the slipway taken from inside the ship.

It is essential for efficient production that the area of the flensing deck should be as large as possible, as this is the deck on which the whales are stripped of blubber (flensed) and then cut up; the pieces of blubber, meat and bone are dropped down small hatches into the various boilers and plant below for extracting the oil and by-products. The flensing deck on this vessel is 291 ft. long by 77 ft. wide.

On the flensing deck there are two steam driven fishing winches and two 40 ton steam winches for hauling whales up the skidway on to the flensing deck. Two steam capstans are fitted on the aft end of the poop deck for handling the special grab hooks which are fastened to the carcase before hauling commences. There are also 10 steam capstans, 12 derricks worked by 16 5-ton electric winches, and a 15-ton steam winch for handling the carcases on the flensing deck. The steering gear is steam driven and is operated by telemotor control from the wheelhouse.



"Whale's eye" view of the factory ship.

There are 10 main cargo oil storage tanks fitted across the vessel. These are divided fore and aft by three continuous longitudinal bulkheads, and summer tanks are fitted port and starboard. The cargo oil tanks have sufficient capacity to contain approximately 21,000 tons of oil at 39 cub. ft. per ton with the necessary allowance for expansion. The double bottom is fitted under the machinery space, suitably divided for fresh water, oil fuel and lubricating oil. The oil bunkers have a capacity of 2,600 tons of oil at 39 cub. ft. per ton.

In addition to the usual auxiliaries, there are three evaporating and distilling plants complete with their accessories each producing 250 tons of fresh water per day.

The propelling engines, supplied by the builders, are of the well-known Harland-B. and W. type.

The seamen are berthed under the upper forecastle deck and under the poop deck. Cooks, stewards, and mess boys are berthed in the lower forecastle. Engine room hands, factory workers and catcher crews are berthed aft.

The complete ship's complement is crew 83, catcher crew 143, factory workers 166—a total of 392. Though the work is hard the men are well paid.

The National Maritime Museum

A Treasure House of British Sea History

By W. J. Bassett-Lowke, M.I.Loco.E., F.R.S.A., and W. M. Hardy

Seal of the Rye Corporation, 1400 A.D.

IT is often said that Londoners know little of the City in which they live and much less about the rare treasures that are housed in museums, libraries, art galleries, cathedrals and other public buildings in London. Indeed, like Mæterlinck's children in their search for the "Bluebird of Happiness," the people of this great port and city frequently wander abroad in search of world wonders, without having first discovered those that lie on their own doorstep.

Some of my readers doubtless live in or near London, whilst others are spread further afield and only visit our capital occasionally. Wherever you may be, there is one thing you are sure to know—that London is the greatest port in the world. What you may not know is that in the environs of London, close to the margin of the history-laden Thames, lies a fine, dignified building wherein the diligent enquirer may find many stirring records of Britain's prowess on the high seas. If you are interested in maritime history—and who on this island of ours is not?—a visit to the National Maritime Museum at Greenwich will reward you with some happy hours spent among paintings, prints, documents, models, navigational instruments, charts and personal relics, all devoted to marine subjects and the lives of our seamen, both famous and unknown, since the days of the early Tudors.

Opened in 1937, the Museum had to be closed to the public during the war, when the valuable collections were stored away in places of safety. It has now re-opened, with war damage repairs effected and the galleries redecorated in a modern style that is so designed as to enhance the lovely pictures, models and instruments there displayed. The new Director, Mr. Frank Carr, is determined to do all he can to make the Museum a centre of interest and study for shiplovers, and to provide visitors with all the help they need to make the most of the facilities offered.

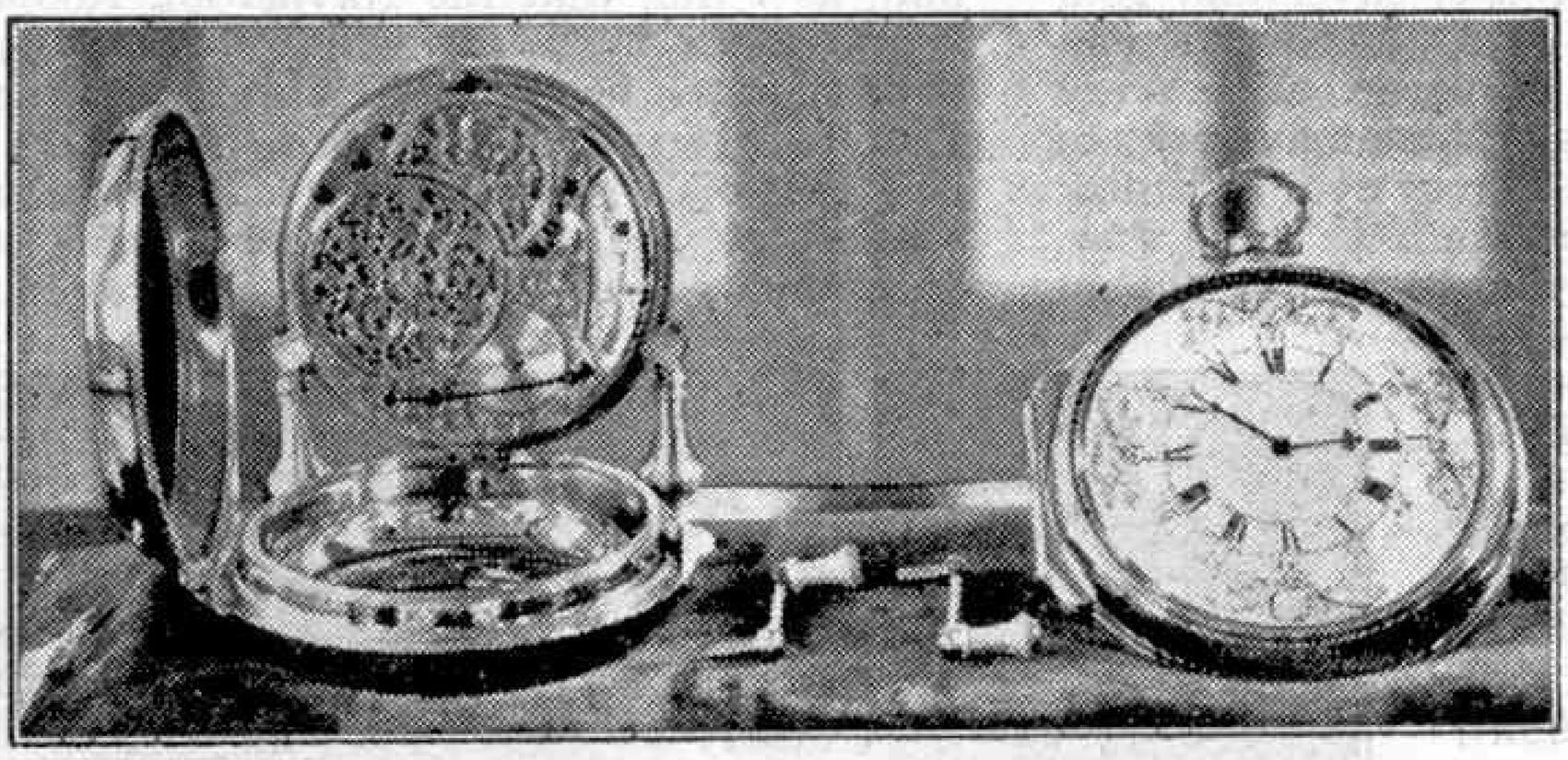
In summer-time, the most pleasant way of approaching the Museum is to board a Thames steamer at Westminster Pier and travel to Greenwich by water, as the English Kings and Queens used to do in their Royal barges. No doubt the Royal progress was a very leisurely one, but nowadays the journey takes about thirty-five minutes—all too short a time when there is so much to watch both on the river and alongside on the embankments. When you see, on the South Bank, the imposing buildings of the Royal Naval College, (which has been called, "The University of the Sea"), with the twin, domed towers, you will know you have reached journey's end, as the Museum buildings lie behind the College, by which they are partly hidden. Ideally situated, these buildings became vacant in 1932, when the Greenwich Royal Hospital School was moved

A general view of the Royal Naval College, from the Thames, one of the familiar Thames barges in the foreground. Photograph by Mr. W. Kemp of the National Maritime Museum.

to Suffolk; they lie on the South side of the main Woolwich—Deptford road, facing the Royal Naval College on the opposite side of the highway.

The present main entrance to the Museum is through the East Wing, which is not yet released from its war-time tenure. So one passes straight on to the Queen's House, a gracious, stately building, commanding a central position and linked with the East and West wings by two colonnades, erected to commemorate the battle of Trafalgar. The Queen's House, designed by the famous seventeenth century architect Inigo Jones, was completed in 1635 for Henrietta Maria, Queen of Charles I, although it had originally been planned for the wife of James I, Anne of Denmark, building having been abandoned in 1619 when Anne died. In this, the first English palladian mansion, we now find the Museum's earliest "dockyard" ship models and numerous pictures and portraits of sea life and personalities linked with English nautical history up to 1702.

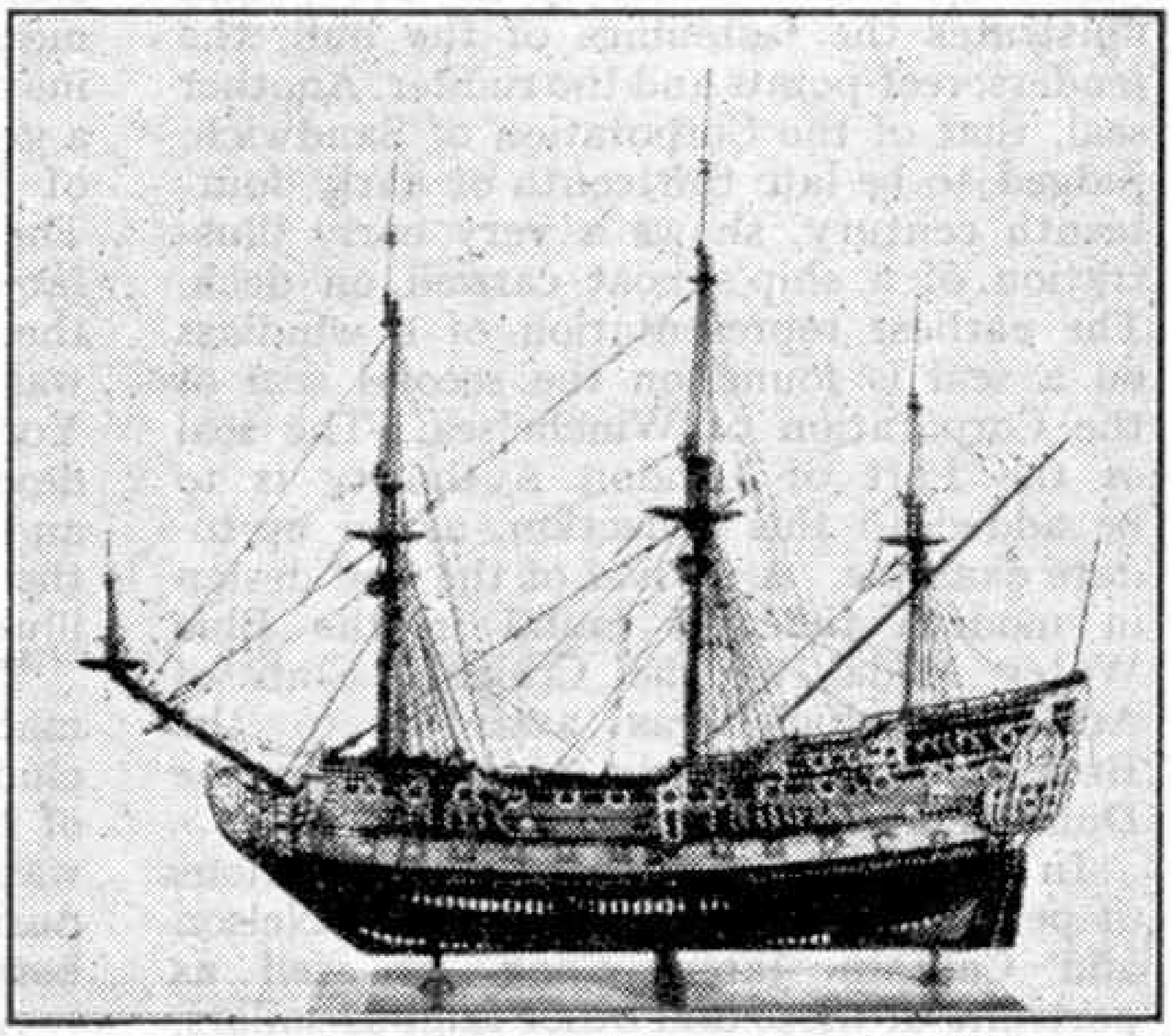
The dockyard ship models are a special feature of the Museum, as they are contemporary models, made usually before the ship herself was built. As you will see from the accompanying photograph, showing a contemporary model of a 90-gun ship of 1675, the hull is built so that all interior construction can be seen, as the purpose of these models was to assist shipbuilders in the actual building of the ship herself. In contrast to the unfinished appearance of the hull, the upperwork on the model was shown in minute detail, and many hours of careful, painstaking labour went into the carving and gilding of decoration on the stern and bows of many of these relics of an ancient craft, of which there are numerous examples in the Queen's House, as well as in other parts of the Museum.



Harrison's timekeeper which won the £20,000 award. Alongside is the copy made by Larcum Kendall. All photographs except the lower one on the previous page are by the courtesy of the Trustees of the National Maritime Museum.

From the Queen's House one traverses the length of the second colonnade to the West wing. Here it will be noticed that certain rooms are grouped under the name of the "Caird Galleries." These, together with the Caird Rotunda (designed by Sir Edwin Lutyens, K.C.I.E., R.A.), and the bust of Sir James Caird, Bart., by Sir Wm. Reid Dick, K.C.V.O., R.A., are a tribute to Sir James, whose generosity has assisted the Museum trustees to attain their object in opening the Museum to the public, in its present form. Indeed, many of the exhibits there are collections formed by Sir James himself, that he has presented to the Nation.

When admiring the graceful Rotunda and the bust of Sir James Caird, the visitor will probably notice two small rooms on either side, opening off the ground floor. These are the seal and



A dockyard model of a 90-gun ship, dated 1675.

medal rooms, both fascinating haunts for "born collectors," and, indeed, for all who appreciate good craftsmanship. The medal room contains many British and foreign medals relating to Naval and maritime affairs. Bronze, silver and gold discs are arrayed here, burnished and shining memorials of deeds of bravery and bygone events. You may ask to see the first Victoria Cross ever awarded. It was bestowed on Mate C. D. Lucas, for his action at the bombardment of Bomasund in 1854. A live shell landed on the deck of the ship "*Hecla*," fuse burning, and Lucas retrieved the shell, throwing it overboard. Lucas, whose rank of "Mate" was equivalent to our modern "Sub Lieutenant," later married his Captain's daughter and lived to become a Rear-Admiral. His Victoria Cross was presented to the Museum by his daughter, Miss Caroline Lucas.

In the seal room, there is a lovely collection of casts of seals, showing the evolution of the sailing ship, as revealed by the ancient seals of seaport towns, mostly European. Sandwich, Dover, Winchelsea, Yarmouth, Ipswich, are names that catch the eye. The Rye seal shown here, for instance, was the second seal of the Corporation of Rye, in 1400, and illustrates the fastenings of the hull, the fenders, reef-points and the rudder. Another seal, that of the Corporation of Sandwich, judged to be late thirteenth or early fourteenth century, shows a very early illustration of a ship's boat carried on deck. The earliest representation of a windlass on a seal is found on the second seal of the Corporation of Winchelsea. The seal of the Port of London Authority is to be added to this collection, as an up-to-date example. A revival of the seal design in modern times is found in the Blue Water Medal of the Cruising Club of America, which was awarded to the British yachtsmen who took part in the Dunkirk evacuation in 1940.

In the Caird Galleries are collections of personal relics of Admiral Lord Nelson and Captain James Cook, as well as portraits of these and other famous sailors, together with portrayals of important historical maritime events. These are far too numerous for even short comments here, but visitors will enjoy discovering these for themselves.

I feel sure that "*M.M.*" readers will find, as I did, that the Navigation Room is one of the most intriguing of the many halls that can be explored. Here, awaiting your discovery, are the histories of the compass, astrolabe, cross-staff, back-staff and sextant, as well as many other records of instruments used at sea for ascertaining time and position. Until the middle of the eighteenth century there was no reliable time-keeping machine available for use at sea, that could withstand the constant motion and changes of temperature inevitable on an ocean voyage. This was a great drawback, as correct determination of longitude depended on this factor. The Board of Longitude even went as far as offering a reward of £20,000 for the solving of this problem, and the prize was eventually won, years later, by a Yorkshireman, John Harrison, who devised a series of timekeepers, each one an improvement on the last, winning the £20,000 with his fourth timekeeper, illustrated here.

You will find all four of Harrison's machines in the Navigation Room, including the fourth one and also a copy of it made by Larcum Kendall (a London watchmaker) and used by Captain Cook during his second (Antarctic) voyage, between 1772–5.

A recent valuable addition to the Navigation Room has been (*Continued on page 454*)

Neptune's Hall, containing the largest collection of models in the Museum.

Experience and Versatility in Western Union Air Command

By C. G. Grey

NO appointment could give greater satisfaction to those on the inside of things than that of Air Chief Marshal Sir James Robb, K.B.E., C.B., D.S.O., D.F.C., A.F.C., as Air Officer Commanding-in-Chief the Air Forces of the Western Union. All his grown-up life has been spent in the Service and he knows all about it. He is a Northumbrian, from Hexham, close to the Roman Wall, and he went from Durham University into the Northumberland Fusiliers in 1914. Thence he transferred to the Royal Flying Corps, and was duly translated into the R.A.F. when it came into being in April 1918.

He won the D.F.C. for flying in the face of the enemy, and the A.F.C. for (as the unofficial saying went) flying in the face of Providence. When fighting with Germany stopped he went to Germany on air control work till in 1922 he was sent to Iraq, where he won appointment to the D.S.O. for work against the Kurds in the hills.

From 1925 to 1927 he was Chief Instructor at the Central Flying School, where they instructed, and still do so, instructors how to instruct. I remember him well in those days, as one of our most brilliant single-seater pilots. He and two others used to put up performances of aerobatic formation flying at the R.A.F. Displays at Hendon which were most elegant to watch, and shattering to the nerves of the guests from foreign air forces. One foreign officer burst into tears at the hoplessness of even expecting his men to put up a comparable aerobatic show.

Air Chief Marshal Sir James Robb, K.B.E., C.B., D.S.O., D.F.C., A.F.C., Air Officer Commanding-in-Chief, Air Forces of the Western Union.

But James Robb was much more than an aerial circus performer, for in 1933 he—as the R.A.F. used to say—took to bell-bottomed trousers and joined the Fleet Air Arm, as Senior Air Officer in H.M.S. *"Eagle"* (the famous carrier) in China, and then became Fleet Aviation Officer to the Naval C.-in-C. Mediterranean, as a Wing Commander.

After that varied experience he was promoted to Group Captain and appointed Commandant of the Central Flying School—where he organized a gathering of early R.N.A.S. and R.F.C. types at a dinner to celebrate the 25th Anniversary of the C.F.S.

When war broke out in 1940 he was made A.O.C. No. 2 Bomber Group, and in 1941 he took over No. 15 Coastal Group where his tour of service with the Navy came in useful. Then, adding all his activities together, in 1942 he became Deputy Chief of Combined Operations.

Just as if that were not enough variety he was sent to command R.A.F. North West Africa, during the Allied Invasion under General Eisenhower, So, somewhat naturally, he went on with "Ike," as Deputy Chief of Staff (Air), to Supreme Headquarters Allied Expeditionary Force (S.H.A.E.F.) for the invasion of Europe (Normandy to Germany), and was present at the Great Surrender in 1945.

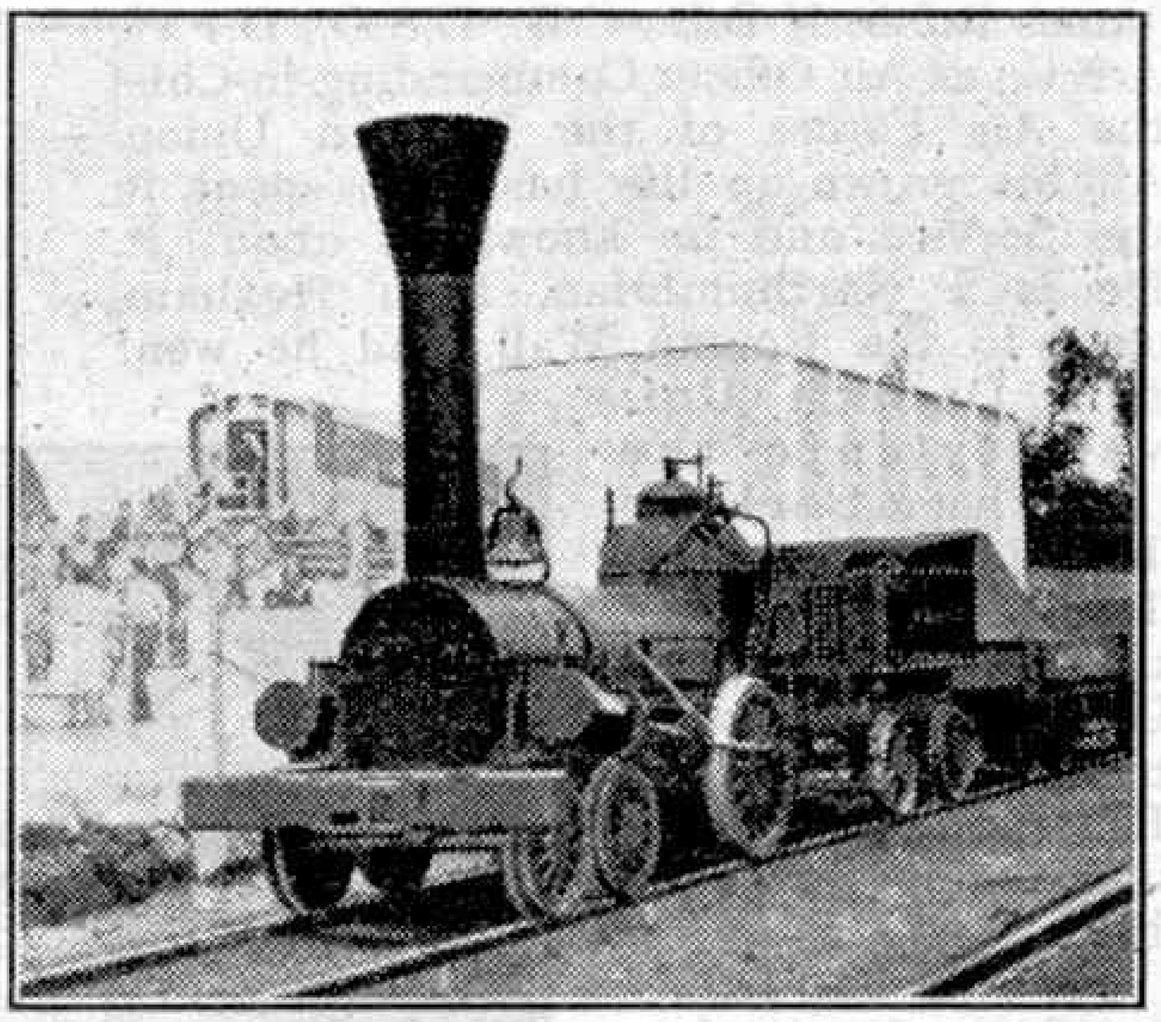
Since then he has been A.O.C. Fighter Command, and on sundry more or less mysterious Staff jobs. In fact the general idea at the Air Ministry seems to be, whenever difficult tasks turn up, to say "Send for Robb."

Some Railroad Exhibits at Chicago

CHICAGO has been described as the railroad capital of the world, which is a fair description of a city served by 22 trunk lines, besides various industrial and connecting systems and three electric railways. It was therefore a fitting place for the huge Railroad Fair, commemorating a century of railway progress, that opened in July last and continued into September. This occupied a 50-acre site on the waterfront of Lake Michigan. Steam, electric and diesel locomotives and trains with typical and special rolling stock provided a spectacular display of full-size railroad equipment old and new on special exhibition tracks.

The motive power giants of to-day were represented by a Union Pacific "Big Boy," one of the class of 4–8–8–4s which are the largest steam locomotives in the world and among the most powerful ever built; the Chesapeake and Ohio turbo-electric locomotive *"No. 500,"* described in last month's *"M.M."*; and great engines from other lines. There were also many locomotive pioneers and veterans that had been dug out of retirement to show how the railroads had made progress since their earliest days.

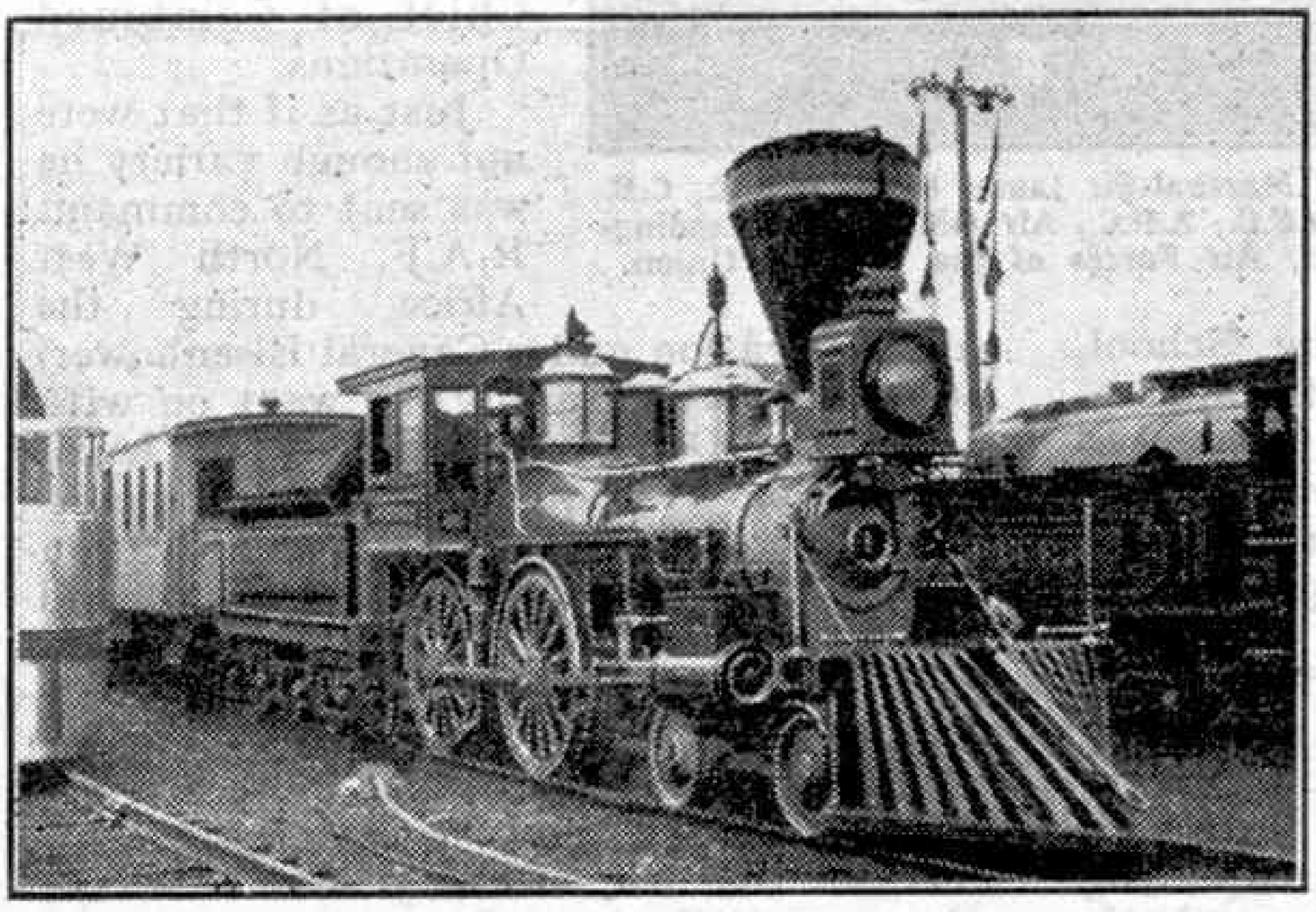
Some of the old-timers are illustrated in this article. The upper picture on this page shows a curious and rather elementary-looking 4–2–0 of 1837 belonging to the Baltimore and Ohio Railroad. Engines of this kind with the fire-box overhanging behind the driving axle seem to have formed quite a type in the early days on U.S.A. railroads. Some of them, built by Norris and Co., Philadelphia, were brought to this country by the Birmingham and Gloucester Railway for working the Lickey incline, a gradient of 1 in 37.



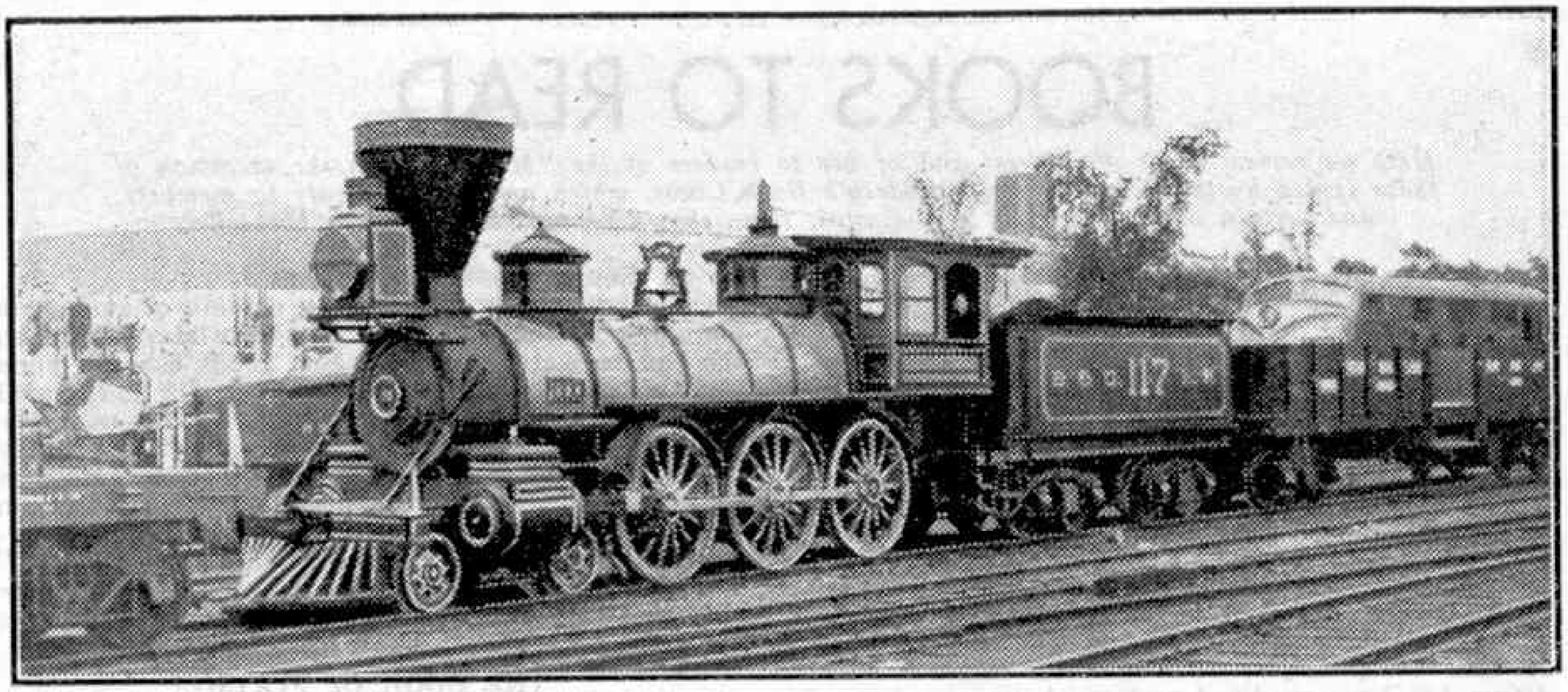
"Lafayette," a curious 4-2-0 locomotive of 1837 belonging to the Baltimore and Ohio Railroad. The illustrations to this article are by C. E. Keevil.

The cylinders of this B. and O. veteran which bears the name *"Lafayette,"* are outside the frames, a characteristic that has been adhered to throughout American locomotive history. On the *"Lafayette"* they have a decided slope, but on the other two engines shown in our illustrations they appear in the more normal horizontal position, with the valve chests above. The latter was a feature of American locomotive design long before outside valve motions became as common as they are to-day.

On the next engine illustrated, the 4–4–0 *"Wm. Crooks,"* the valve motion is between the frames, being connected to the valves by means of rocking levers. *"Wm. Crooks"* is in fact a notable specimen of the type traditional on U.S.A. railroads for all kinds of duty for many years; so much so that the name



A typical early "American" type engine, as the 4-4-0 is usually called in the U.S.A. The engine is the "Wm. Crooks" built in 1861.



An early Baltimore and Ohio "ten-wheeler" with most of the American locomotive characteristics of former times. The outsize chimney and headlamp are notable features.

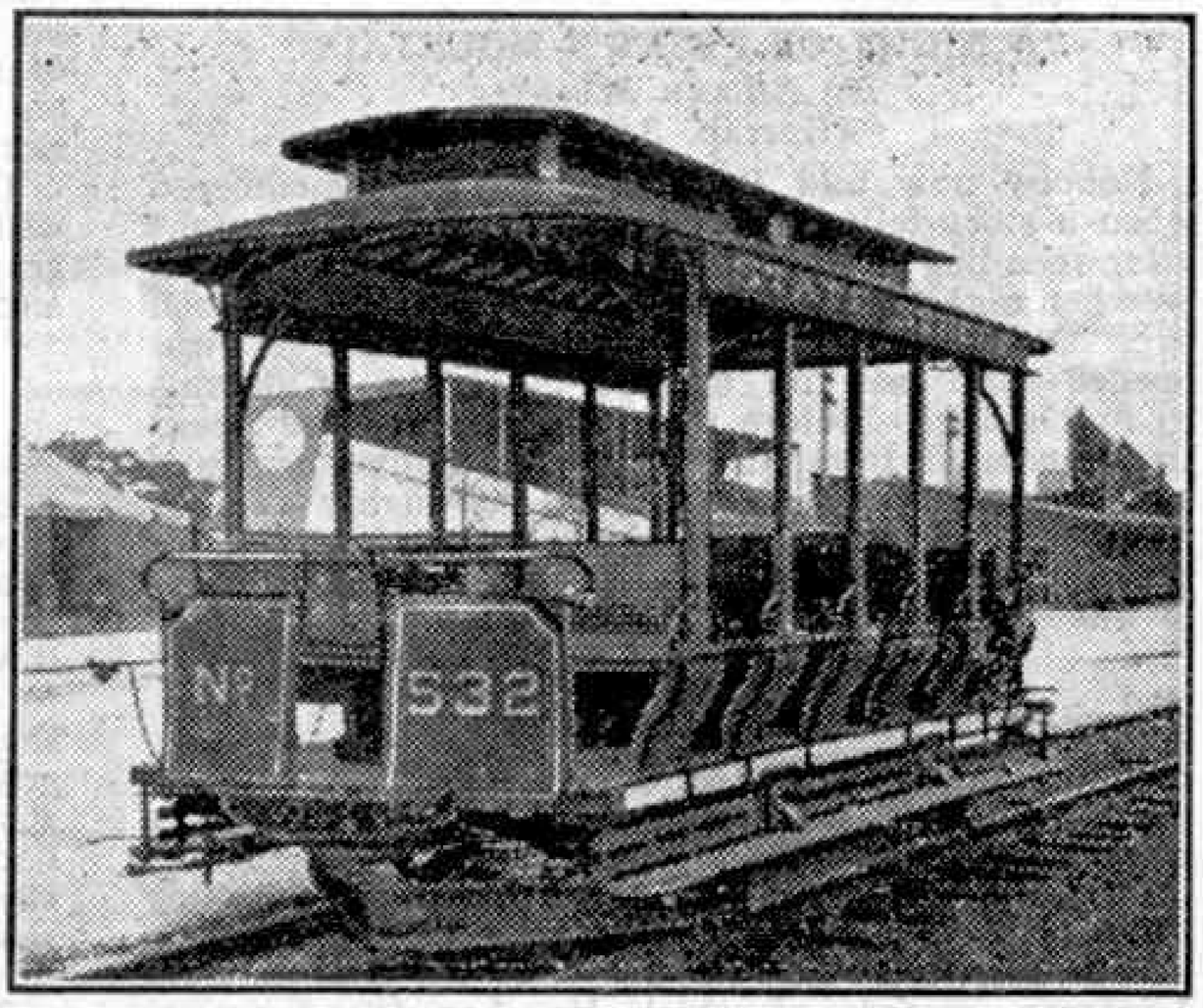
"American" came to be applied to the 4–4–0 wheel arrangement.

"*Wm. Crooks*" is a notable locomotive individually. It was the first to be seen in the north west, for it was No. 1 of the first division of the St. Paul and Pacific Railroad, and was named after the engineer who drove the first spike holding the first rail of this new route. It was built in 1861 in New Jersey and carried by barge to St. Paul, but it was not put into service until 1862. It began its career as a wood-burner, which explains the special chimney, but it has also used peat and coal as fuel. Ultimately it passed into the hands of the Great Northern Railway, and in 1908 it was rescued literally from the scrap yard by James J. Hill, founder of the Great Northern and a noted railroad magnate of former years, often referred to as the "Empire Builder." It has been brought out of retirement on various occasions.

A well-known representative of later days also exhibited was the "high-wheeled" No. 999 of the New York Central, built in 1892. It has often been credited with reaching 112½ m.p.h. in 1893 with the "*Empire State Express*," but there does not seem to have been any authentic backing for this feat. Still, old "999" with its tender sides boldly lettered "*Empire State Express*" is a typical "American" of the nineties.

The 4–6–0 was a natural expansion of the 4–4–0 wheel arrangement, and for many years the "American" and the "Ten-Wheeler" exhibited very similar characteristics of design and external appearance. Thus the Baltimore and Ohio 4–6–0 No. 117 shown in the upper illustration on this page has a similar front-end to "*Wm. Crooks*." There is the same well-spread "pilot" or cow-catcher, a similar outsize headlamp and chimney. Apart from the chimney, the boiler mountings are quite ornamental. The forward one is a sand-box or "dome," the steam dome itself being immediately in front of the cab.

A rail transport show in Chicago could hardly fail to include an example of the stock of that city's street railway system. These surface lines are almost traditional, for a horse car line began operation in 1859. A later development in 1882 was cable operation and one of the State Street trailer vehicles is illustrated. Such trailers, three in each train, were hauled by special "gripper" cars.



A car of the type introduced on street cable railways in Chicago in 1882. Note the open-sided construction and the unusual roof.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With the exception of those issued by the Scientific and Children's Book Clubs, which are available only to members, and certain others that will be indicated, these should be ordered through a bookseller.

"THE STANIER PACIFICS OF THE L.M.S."

By CECIL J. ALLEN, M.Inst., T.
(Ian Allan. 3/6 each)

In his latest book Mr. Cecil J. Allen traces the development of the now familiar "Class 7" 4–6–2s of the L.M.S. from the pioneer engines of 1933 to the latest examples placed in service within the last 12 months. This is an interesting story, for the Stanier 4–6–2s differed from previous passenger designs of the L.M.S. in size and wheel arrangement, and they also introduced on the line four-cylinder propulsion with divided drive, tapered top-feed boiler barrels and wide fire grates. All these are retained in the later members of this 4–6–2 series, although the original boiler design has been modified and much improved.

We read first the story of the early "Princess" series, including the epic trips of No. 6201 "*Princess Elizabeth*" between Euston and Glasgow in 1936, and then of the share of the L.M.S. in the high-speed era of pre-war days, which gave rise to the "Coronation" streamlined series of 4–6–2s and the redoubtable non-streamlined "Duchesses." An exciting trial of the first of the former, the remarkable test run of one of the latter with a 600-ton train on a double trip between Crewe and Glasgow, and the adventures of the "*Coronation Scot*" train in the U.S.A. in 1939 have chapters to themselves. The one odd member of the Stanier 4–6–2 class, well-known as the "Turbomotive" in view of its turbine drive, also receives attention. Wartime and post-war developments in detail, which have culminated in the provision of roller bearings throughout the last two members of the series, one appropriately named "*Sir William A. Stanier, F.R.S.*," bring the reader to the period of the recent locomotive exchanges.

There is a complete pictorial record of the Stanier 4–6–2s, with logs of notable runs, tables of dimensions and diagrams of the different versions of the "Class 7" engines.

Copies can be obtained from bookstalls, booksellers and agents of the publishers at 3/6 each; or direct from Ian Allan Ltd., Mail Order Department, 33, Knollys Road, Streatham, London S.W.16., at 3/8½ including postage.

"A NIGHT ON PETER'S MOUNTAIN"

By EILEEN MATHIAS
(Harrap. 3/6 net)

Nobody now told Peter stories. He remembered when a story-teller used to come to him every night after spending time on the mountain collecting them. So when night came Peter slipped downstairs, climbed over the garden gate—it squeaked when it was opened—and set off up the mountain of dreams to find stories. Before morning came he had heard six wonderful tales, and had had many surprising adventures. The details will be thoroughly enjoyed by our younger readers, who will follow David in his pilgrimage and examine with interest the pictures of the people and creatures he met.

"THE TERRIFIED VILLAGE"

By NORMAN LEE
(Lutterworth Press. 5/–)

The old time smugglers of the Kent and Sussex coasts stopped at nothing when running their forbidden cargoes into the country and distributing them, and many terrible tales are told of the crimes they committed. One famous gang was the Zack-o'-Lanterns, records of which Mr. Lee found among ancient documents in Winchelsea. This led him to write "*The Terrified Village*," the tale of how Paul Vassar fell in with the gang when visiting his aunt on the South Coast.

One night the boy watched a column of smugglers marching inland, and a night or two later he hid on the cliff to watch them bringing goods ashore. Then came a catastrophe, for he fell off the cliff and landed right among them, to discover that they were the Zack-o'-Lanterns, following the directions of a mysterious leader known as the Shadow. He was forced to join them, but eventually he helped Captain Lawless, a Government agent who posed as a highwayman, to break up the gang and unmask "The Shadow." The identity of this mysterious leader was an immense surprise, which we will leave the reader to discover for himself.

"THE BOOK OF FLYING"

Edited by CARLTON WALLACE
(Evans Brothers Ltd. 12/6 net)

This book is all about aeroplanes, the way they are flown, and the people who fly them—a veritable one-volume encyclopædia of aviation that will make a delightful Christmas gift for any boy interested in aircraft. It is written in an easy conversational style that makes even unavoidable technicalities interesting. The range of subjects covered is so wide that of necessity they are dealt with briefly, but everything that "really matters" about them is touched upon to ensure that the reader can accurately understand the "how and why."

The book begins, of course, with a brief outline of Man's earliest efforts to fly and tells how Orville Wright made history on the 17th December 1903 by accomplishing the first flight in a heavier-than-air machine. The ensuing 45 years are spanned in chapters on famous aircraft of the past and the development of airlines from short, internal air services to the great trans-ocean air routes of to-day. The different kinds of aircraft now produced are explained, including the weird-looking all-wing types regarded as the "aircraft of to-morrow," and gliders, helicopters, and airships also are mentioned.

Other chapters describe a visit to an aircraft factory, how an aeroplane works, flies, is navigated and can be refuelled in the air; the marvel of radar, the operation of a large airport, aircraft research, and how a jet engine works. There is the story of the A.T.C., of the hazardous life of a test pilot, and a chapter on Reginald Mitchell, the brilliant designer of the world-famous "Spitfire" fighter.

This truly fascinating book is lavishly illustrated with 17 plates in colour, 64 pages of half-tone photographs and 150 explanatory line drawings, diagrams and maps.

THE "LITTLE MISS PINK" BOOKS

By RODNEY BENNETT
(Harrap. 3/6 each)

Here are two more books for our youngest readers. Little Miss Pink is a tame white mouse who lives in a beautiful little house. Her only grievance is that her window is always closed, so when one morning it was left slightly open by mistake she slipped out to explore the world. In the first of the two books she roams through a garden, has her tail pulled by a goldfish in a pond and finally meets Grandpa Puff, a fine old gentlemanly frog. When she tries to return home she finds her window closed, so she goes to sleep in a cottage in Flower Pot Row. There, in the second book, she wakes up and meets the most delightful mouse family ever thought of.

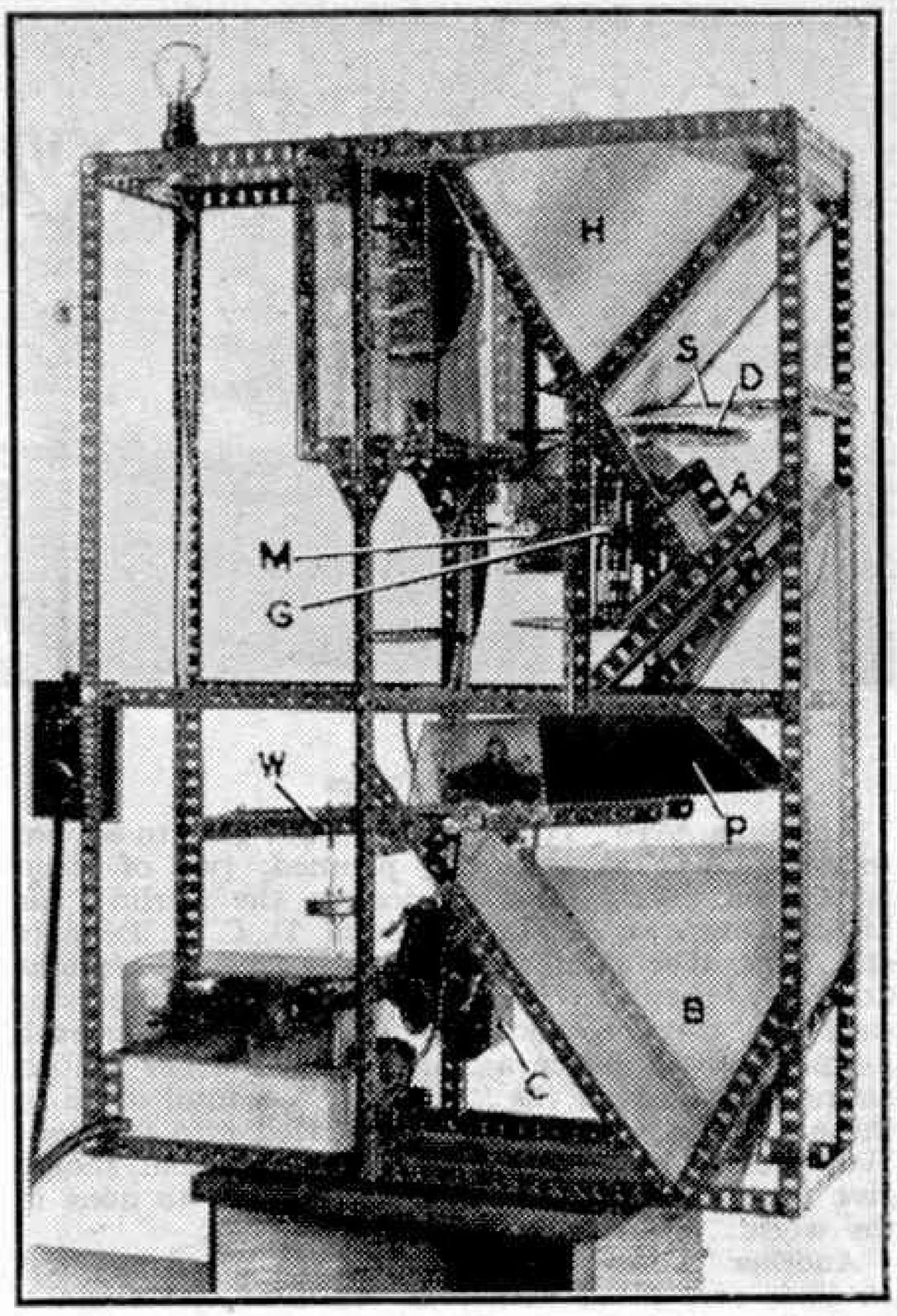
The Little Miss Pink books are delightful for children, who will not only enjoy the little lady's adventures, but also will be delighted by the splendid coloured pictures by Astrid Walford.

Meccano in the Laboratory

WE have been very interested to receive from the Research Department, Physics Division, of BX Plastics Limited, some photographs of mechanisms largely built of Meccano, and used in the laboratories.

The picture below shows a machine constructed to test the tensile properties of very fine thread materials. A specimen S is held between two grips, one shown at H and another lower down and not included in the picture. The bottom grip may be driven vertically in either direction by means of the motor M working through the reversible gear-box F and the rack and pinion A. This stretches the specimen and also rotates the recording drum D, so that the stretch of the specimen is recorded by the amount of rotation of the drum.

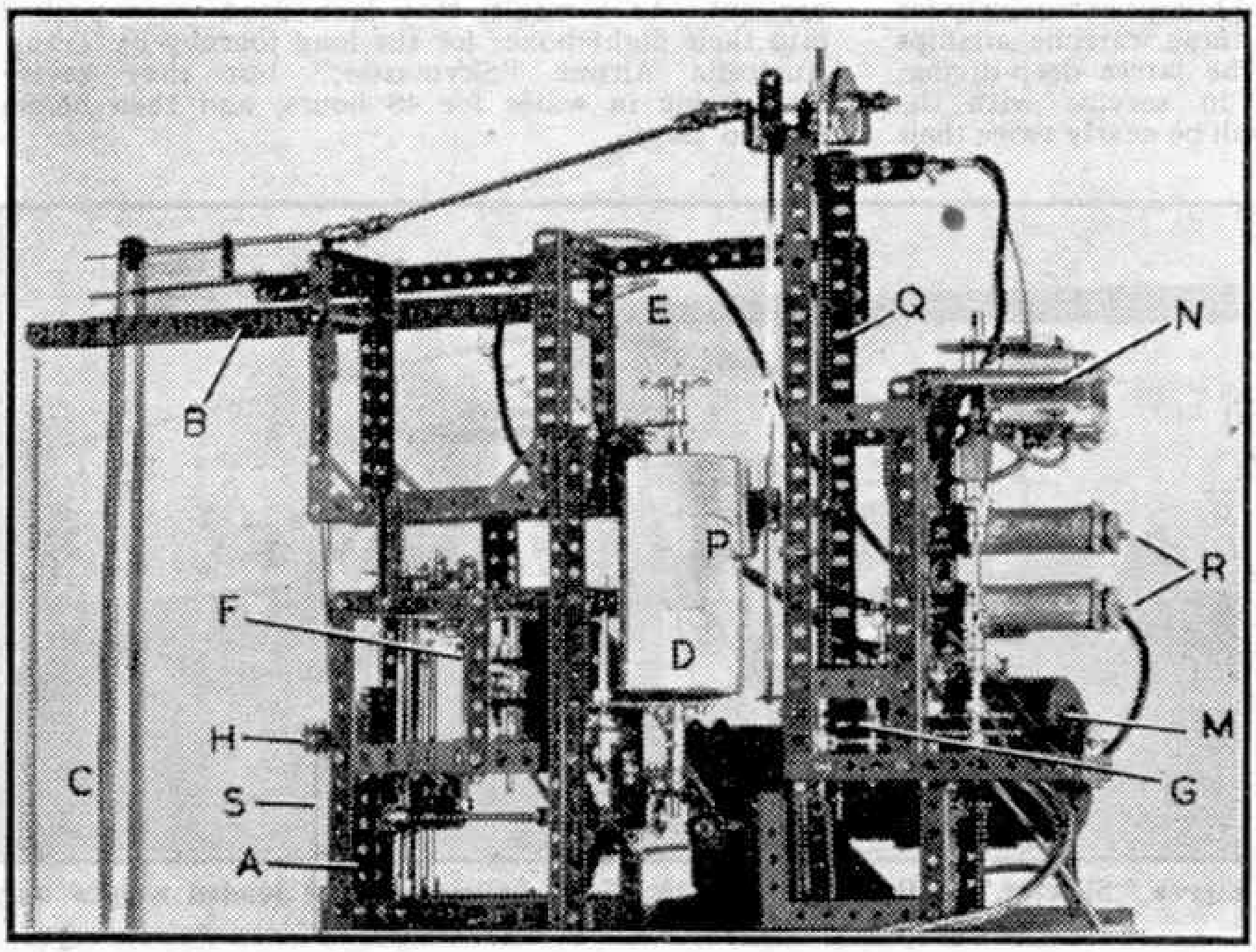
The top grip H is suspended from a balance arm B, so that as the specimen stretches it upsets the balance and makes the electrical contacts E. This operates the electric relays R which control the motor N. This motor, through the three-speed gear-box G, continually adjusts the balance of the beam B by altering the amount of chain C hanging from it. The amount of chain in use is recorded by the pen P worked by the screwed rod Q.



Thus, load is plotted against elongation. The gear box F automatically goes into neutral when the rack A reaches the end of its track. The grips are easily extended for use with the specimen immersed in liquids or in an oven or refrigerator.

The upper picture shows a machine designed to weigh out a fixed amount of powder at regular intervals. The powder is stored in the hopper H which has a rectangular hole at the bottom. This spreads powder on to the disc D which may be driven by the motor M through the gears G. The motor is started at regular intervals by a synchronous electric motor C, and then feeds the powder which is swept off the disc by the sweep S into the chute A and thence to the pan P. This pan is fixed on a

(*Continued on page 454*)



Photograph by courtesy of A. V. Roe and Co., Ltd.

"Tudor" Topics

Although Avro "Tudor" IIs will not go into service with B.O.A.C. as originally planned, two of them have been giving good service on the Berlin "Air Lift." Flown by Air Vice-Marshal D. C. T. Bennett and two other pilots of his newly-formed Airflight Company, they have been making two to four trips each day, carrying about 10 tons of freight on each journey—nearly twice as much as any other British aircraft engaged on the "Air Lift." A total of 15 of the other Mk. IIs are being converted into "Tudor" IVB pressurised freighters for B.O.A.C., and should give the Corporation a cargo fleet second to none in the world.

Another "Tudor" in the news is the Mk. 8, the first air liner ever fitted with four "straight" jet engines. It is illustrated above. Fitted with four Rolls-Royce "Nenes" it is very much over-powered and only a small number will be built, but they will undoubtedly provide a great deal of useful research data on jet air liner operation. The only performance figure that may be quoted is its cruising speed of 320 m.p.h.

Lighter-Than-Air News

Encouraging news for airship enthusiasts comes from America. The U.S. Navy has awarded the Goodyear Rubber Company a contract for a super-blimp suitable for anti-submarine patrol duties.

During the war this Navy used blimps extensively for hunting German U-boats, but these wartime airships would be of little use against the latest deep-diving, high-speed submarines now in service with the world's navies. The new blimp will be nearly twice their size, with a length of 324 ft., a helium capacity of 825,000 cu. ft., and accommodation for a crew of 14 on its two decks. It will be able to fly long enough and carry a big enough military load to hunt submarines fitted with the Schnorkel "breathing tube," which enables them to stay submerged almost indefinitely.

Airship enthusiasts in America hope that the new super-blimp will prove so successful that it will pave the way for huge civil airships able to carry hundreds of passengers on regular transatlantic service. The pre-war success of the old German "*Graf Zeppelin*" proved the suitability of airships for such work.

Cierva "Skeeter" Helicopter

The little Cierva "Skeeter" two-seater helicopter, illustrated on this page, is one of the smallest and most interesting rotating-wing aircraft ever built. In contrast to the Cierva Company's other new helicopter, the "Air Horse," which "*Punch*" recently described as looking like a "motor coach arguing the toss with a lot of steel scaffolding and three windmills," but which is nevertheless a promising design, the "Skeeter" proves that a successful helicopter can be both simple and inexpensive.

Since brief details of the "Skeeter" were given in the July 1948 "*Air News*" the prototype, which has a 102 h.p. Jameson flat-four engine, has successfully completed its initial flight trials. Cierva are confident that if it is manufactured in reasonable numbers its price should be less than £3,000, while its operating cost should be comparable with that of a 20 h.p. car. It will have a range of about 155 miles with two occupants. Production "Skeeters" will almost certainly be fitted with a D.H. "Gipsy" engine, giving rather more power than the Jameson.

Flowers by Air

During Winter months cut flowers are flown nearly 2,000 miles from Western Australia to the eastern States, where they find a ready market. Gladioli blooms are picked before the buds open and left to dry out. As a result, they look dead when packed into their flight boxes for the long journey by Trans-Australia Airline "Skymaster," but they revive after being in water for 48 hours, and then bloom for ten days.

Cierva "Skeeter," a British two-seater light helicopter that loaded weighs only 1,200 lb. Further details are given above.

The Chrislea "Super Ace"

The Chrislea "Super Ace," illustrated on this page, is proving one of Britain's most popular post-war light 'planes. Latest orders for this interesting little 4-seater come from Denmark, Rhodesia and the Argentine. The Argentine contract is a particularly good one, as the Casa Iturrat Company of Buenos Aires, which imported 92 American light aircraft this year, has agreed to import only "Super Aces" in future. The first two are already on their way to the Argentine, and a further order for 24 of these machines is expected to follow in a few weeks.

The Chrislea "Super Ace," a very promising British four-seater light aeroplane now in quantity production.

The "Super Ace" is powered by a 145 h.p. "Gipsy Major" engine, and with four passengers it can fly for 400 miles at 115 m.p.h.; with two passengers it is fully aerobatic. As a matter of fact, the first machine built handled so well during its initial flight that the pilot put it through spinning tests before landing, probably the only time this has ever been attempted during the first flight of a new aircraft. As a result, he was able to confirm that the "Super Ace" will not spin, and is thus a very safe, pleasant little aeroplane.

Australian Air-Mindedness

Australia is the most air-minded country in the world, according to figures given by her Air Minister. "In 1941," he said, "Australian airlines, crammed to capacity with war-priority passengers, carried a total of 170,000 people. In 1947 the total was over 1,000,000. In 1941 the airlines lifted 1,200 tons of freight. In 1947 the total was 18,000 tons."

One explanation of this is that Australian operating costs and fares are probably lower than that in any other country. The network of 47,000 miles of internal airlines now do more business than the domestic airlines of any other country except the United States. In fact, population figures show that the average Australian does more flying to-day than the average American.

Qantas Empire Airways "Constellations" are running on the world's most extensive and fastest long-distance air route, between Britain and Australia. British Commonwealth Pacific Airlines, owned jointly by Britain, Australia and New Zealand, are flying the world's greatest over-ocean service, linking Australia with the great airlines of Canada. Thus travellers can encircle the globe, using only British airlines.

New Speed Record

Flying a fully-armed and equipped North American F-86 jet fighter, Major R. Johnson of the U.S.A.F. has set up a new World's Absolute Speed Record at Muroc Dry Lake, California, with an average speed in four runs of 670.98 m.p.h. This exceeds by 20 m.p.h. the old record established more than a year ago by a Douglas "Skystreak" research aircraft.

The F-86, shown in the lower photograph on this page, is a swept-wing interceptor, powered by a 5,000 lb. thrust Allison J-47 engine. It is in full production for the U.S.A.F., and with its armament of six .50 in. machine-guns should prove quite a formidable fighter.

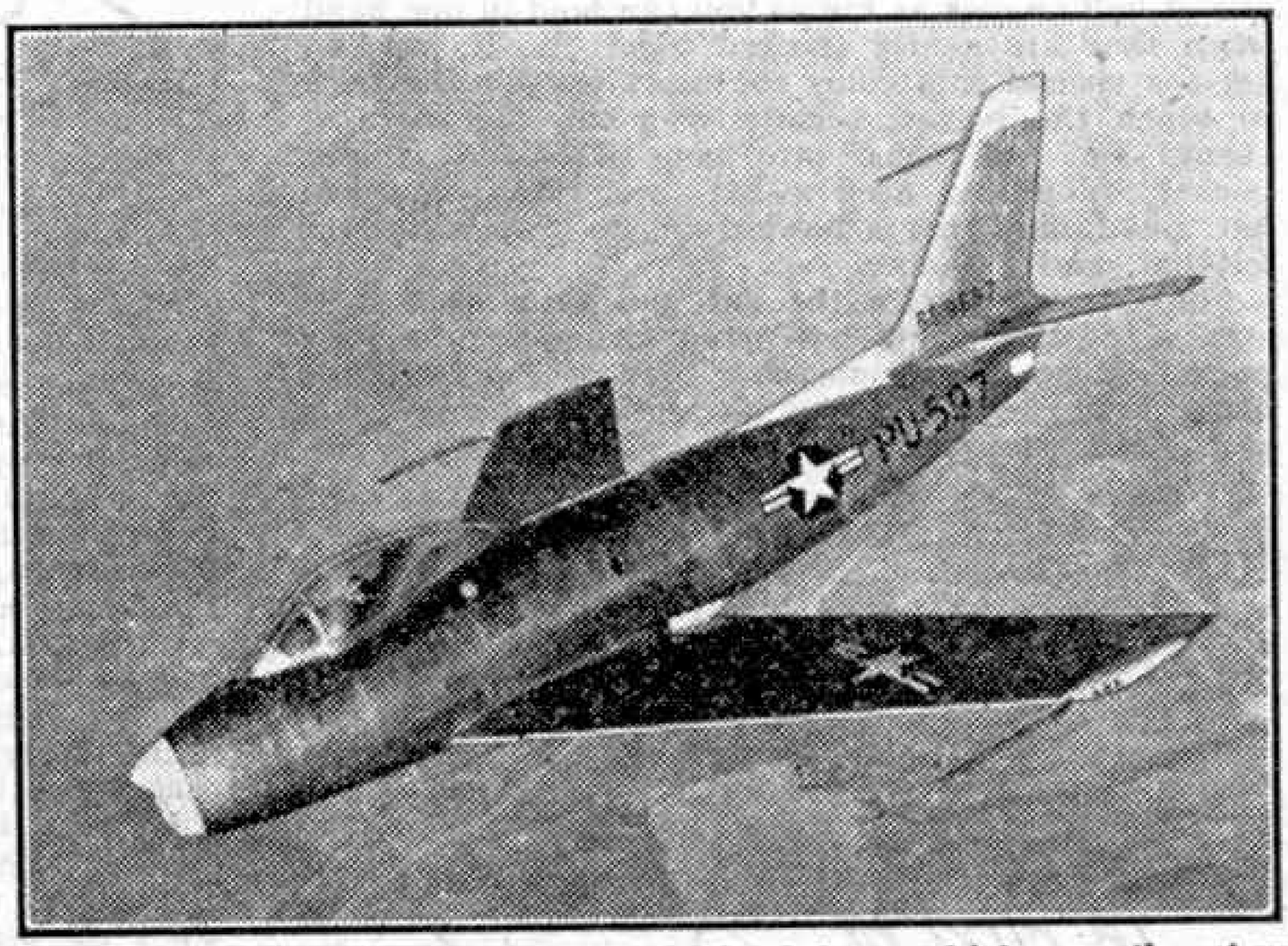
American Airlines Statistics

The chairman of the board of American Airlines accepted the National Safety Council's billion mile aviation safety award plaque for 1947 at a ceremony in New York recently. The award, computed from Civil Aeronautics Board records, was made in recognition of the fact that the airline flew 1,502,499,000 scheduled passenger miles between 28th December 1946 and the end of 1947 without fatality.

In fact, the total passenger miles flown since the last fatal accident had exceeded every record in the history of air travel by the end of July 1948, when American Airlines had completed 3,310,679,000 safe passenger miles. By the middle of September, American Airlines' international subsidiary, American Overseas Airlines, had made over 17,000 transatlantic crossings.

* * * *

A new air service, connecting United Kingdom points with the sterling areas of Nassau and British West Indies via Montreal, is to begin on the 2nd of this month. It will be operated by Trans-Canada Air Lines with their "North Star" 40-passenger aircraft, and there will be twice-weekly flights in each direction to Nassau and Kingston, Jamaica, and once weekly to Trinidad.



The swept-wing North American F-86 jet fighter, which recently set up a new World Speed Record of 670.98 m.p.h. Photograph by courtesy of North American Aviation, Inc., U.S.A.

Puzzle Your Sharp-Eyed Friends

By Norman Hunter (From Maskelyne's Mysteries)

FOR this year's helping of magic, I am going to describe some famous tricks and illusions, with simplified ways of performing them. But the word "simplified" is something of an illusion itself. The fact that a trick is simple to do does not mean that you can rush straight on to the platform, do the trick and bring the house down. You are much more likely to bring yourself down. A little practice and a few trials on your own are highly advisable, even with the easiest trick, before you burst out with it upon an expectant, but possibly slightly critical audience.

Let us begin with—

THE MONEY CATCHING TRICK

You have probably seen it done. The conjurer goes round catching half crowns from the air, picking them off people's chins, finding them in ladies' hats, until he has quite a quantity, which he pours out in a crashy glittering shower.

FIG 1

How to do it. First, alas, you need the money, a pile of half crowns as big as you can hold in one hand when they are neatly stacked together. If you can get the special thin coins conjurors use for the trick so much the better, because you can use more of them. Put the coins into your left-hand trouser pocket. You also need a hat, preferably an opera hat, but failing that a bowler will do or a fairly stiff felt hat, and a saucer.

Come forward with the hat and show that it is empty, putting your left hand casually into your pocket where you secure your load of coins. "They often take up collections at entertainments" you say. "Sometimes they use a box, sometimes a hat, like this. I use a saucer as well, because I'm a sorcerer." You take your left hand out of your pocket and put the hat over it, gripping the hat with the fingers inside and the thumb outside the brim. The coins are held against the leather band as shown in Fig. 1. Pick up the saucer and put it into the hat, then with your left hand push one coin off the top of the stack into your right hand, where you conceal it in the curve of your fingers as in Fig. 2.

You now pretend to catch a coin from the air. You will find you can grip the coin quite firmly at the base of your fingers and the hand will appear empty as long as you present its back to the audience or upward so that your curved fingers hide the coin. Make a catching movement in the air, at the same time sliding the coin to your finger tips with your thumb. The movement is quite easy and natural. Having caught a coin, pretend to drop it into the hat. What you really do is to draw it back into the hidden position again, at the same time letting fall one of the coins from the stack in your left hand. This falls into the saucer and to the audience it looks exactly as if you have dropped into the hat the coin they have just seen you catch. Try the movement in front of a mirror.

FIG 2

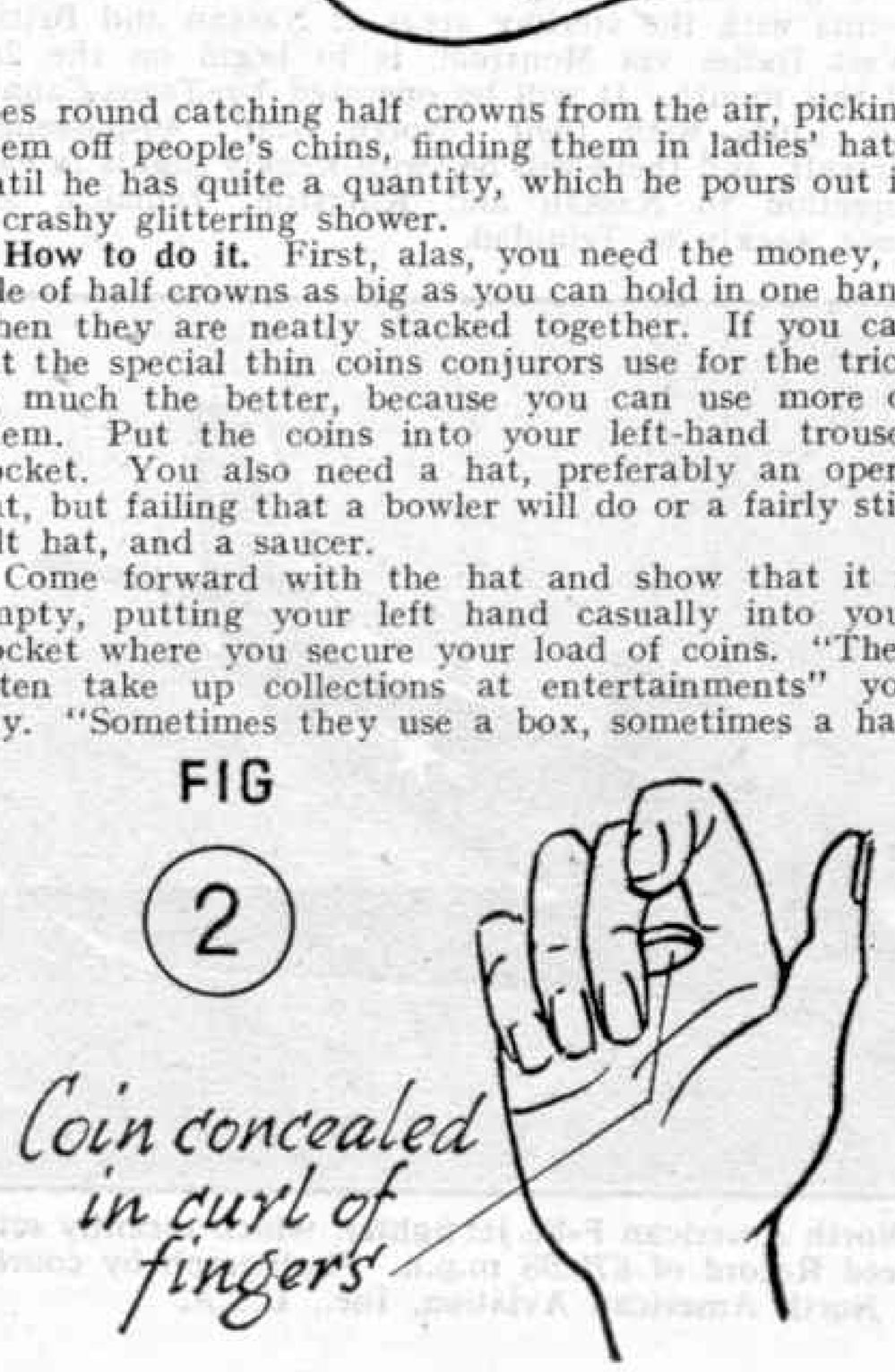
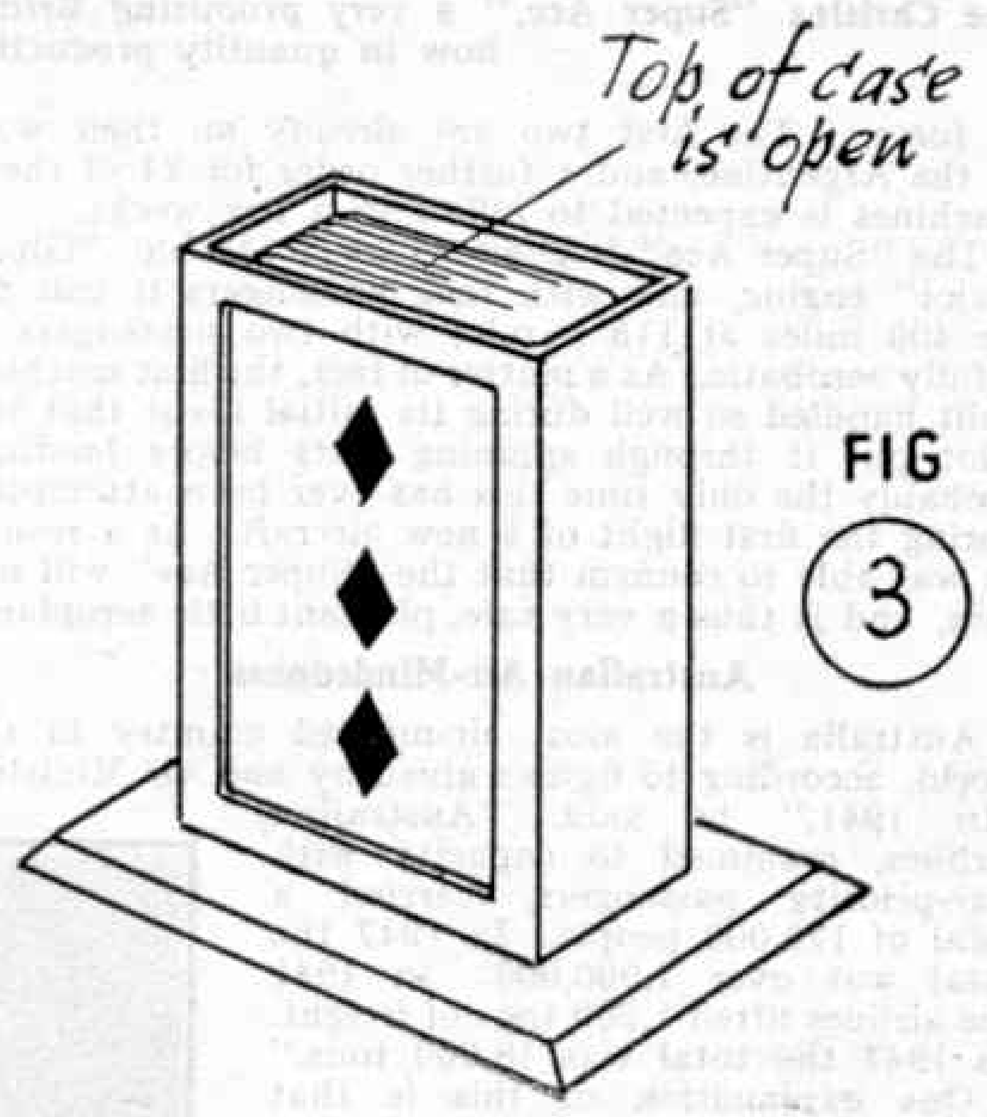


FIG 3



The trick then continues with variations of this movement. You can pretend to find coins in all sorts of odd places, on picture frames, on the floor, on the curtains. As you near the end of the pile, and the coins in your hand become easier to manage, you can pretend to push one through the crown of the hat. Show the coin, tap it against the outside of the crown twice, and the second time slide it back behind the fingers and drop a coin from your left hand. The illusion of the coin going through the hat is perfect as long as you time it well. Again, pretend to swallow a coin. Bring it up to your mouth, appear to put it into your mouth but draw it back into the concealed position again. Make a face as if chewing the coin, then blow towards the hat and "clink" drop another coin.

You can now go down to the audience and pick coins off people's laps, elbows, hats and so on, but while you are doing this part of the trick, keep the crown of the hat turned towards the spectators so that nobody sees the concealed store of coins. Now for a spectacular finish. As you come to the end of

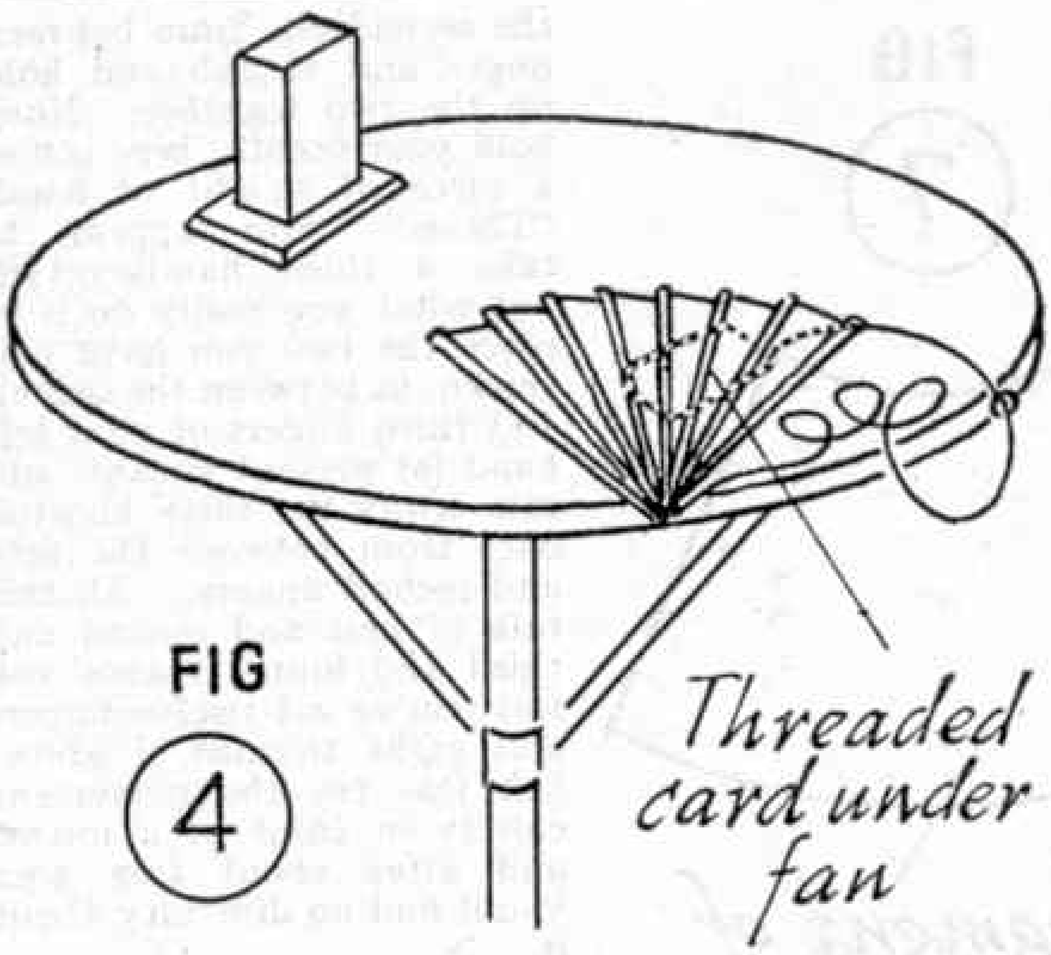


FIG 4

the coins, openly throw the last coin in, then take a handful of coins from the hat and pour them back in a shower. Do the same again but this time only let a few coins trickle back, keeping the others concealed in your right hand. Instantly transfer the hat to your right hand and, with your empty left hand outstretched, go to a gentleman in the audience and open his jacket slightly saying "You really shouldn't carry all your pocket money about with you at once, sir." Take the hat back in your left hand, plunge your right hand into his jacket, then holding the hand well above the hat, let the coins pour in and on to the saucer.

Now for the celebrated—

RISING CARDS TRICK

There are probably hundreds of ways of doing this famous trick. Here is a very effective and easy one, in which three cards chosen by the audience rise by themselves, one by one, out of the pack.

How to do it. You will need something in which to put the pack during the trick. A straight-sided glass tumbler is the best, but if you can't get one the right size, make a wooden box just large enough to take a pack easily. The box should have a wide base, no top, and an open front, as shown in Fig. 3. Take one card from the pack and fix the end of a long piece of fine black cotton to one end of it. Put this card face down on your table with an open fan over it and tie the other end of the cotton to the handle to the fan. (See Fig. 4). The cotton should pass through a small screw eye in the back edge of the table, or, if holes in the table are frowned on, through the loop of a safety pin fixed in the table-cloth.

Begin by handing the wooden case for examination. Now take the pack to three members of the audience and ask each to choose a card and keep it. Return to the table, move the fan to one side and put the pack face downwards on top of the card that has the thread attached. Now take back the case, pick up the pack and drop it into the case with the threaded card at the front, drawing the thread across the top edge of the pack. Take back the three chosen cards and push them down one at a time into the pack. Each card will of course take some of the thread down with it and the result will be as shown in the section

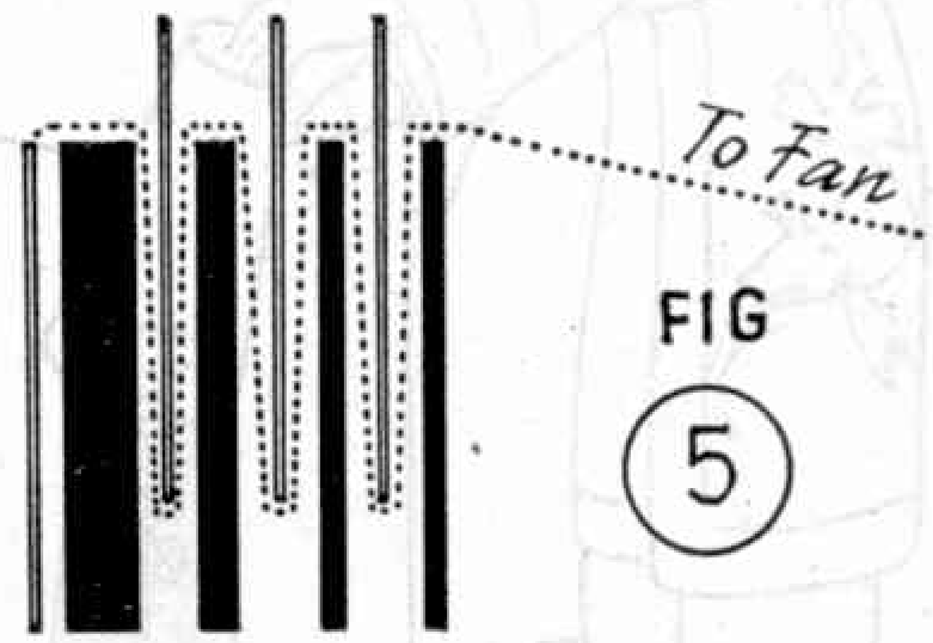


FIG 5

Section showing how chosen cards are replaced in the pack.

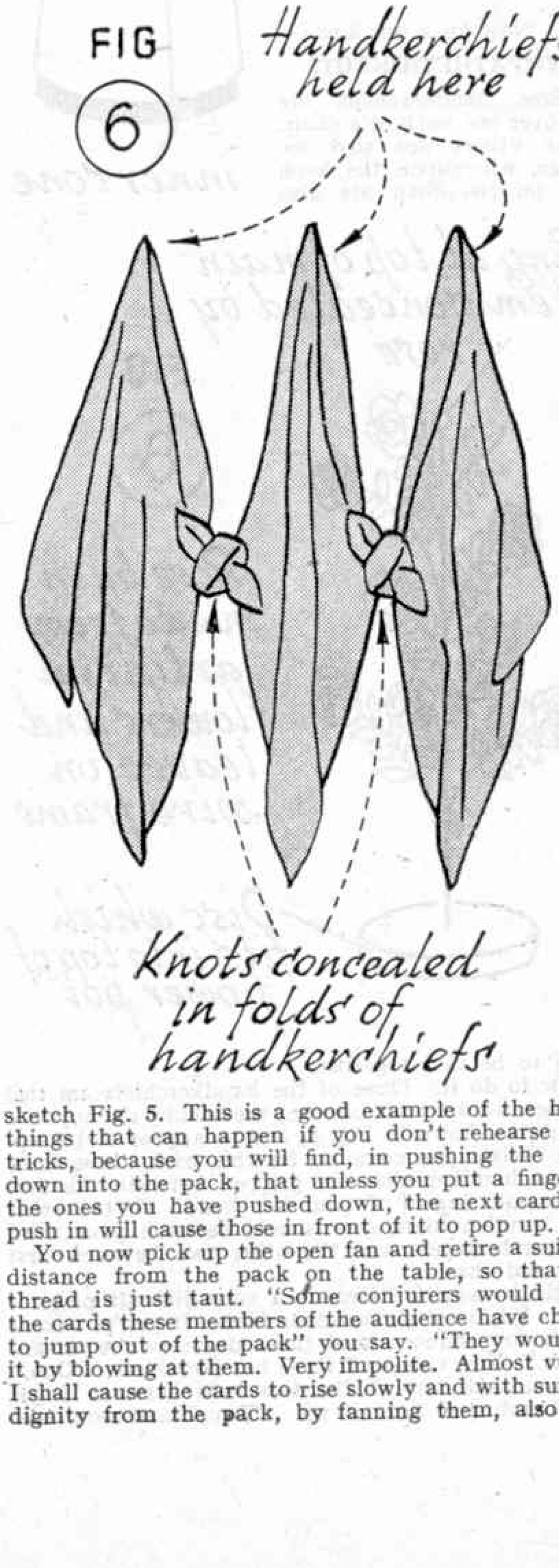


FIG 6

sketch Fig. 5. This is a good example of the horrid things that can happen if you don't rehearse your tricks, because you will find, in pushing the cards down into the pack, that unless you put a finger on the ones you have pushed down, the next card you push in will cause those in front of it to pop up.

You now pick up the open fan and retire a suitable distance from the pack on the table, so that the thread is just taut. "Some conjurers would cause the cards these members of the audience have chosen, to jump out of the pack" you say. "They would do it by blowing at them. Very impolite. Almost vulgar. I shall cause the cards to rise slowly and with suitable dignity from the pack, by fanning them, also with

suitable dignity, with this fan. No frivolity please: this is genteel witchcraft."

You now fan gently towards the cards and under cover of this movement bring the fan gradually away from the table, thus causing a pull upon the cotton. The first card chosen—and remember it will be the last card you replaced in the pack—will then rise very spookily from the pack. Take it out. "Is this the card you chose sir? Thank you." Repeat the fanning and the next card rises, and in due course the last card. Tip the cards helter skelter out of the case and the trick is over.

Now for a quick one—

SYMPATHETIC KNOTS

Three handkerchiefs are laid over the back of a chair. Three others are tied together, whereupon the loose ones on the chair are also found to be tied together.

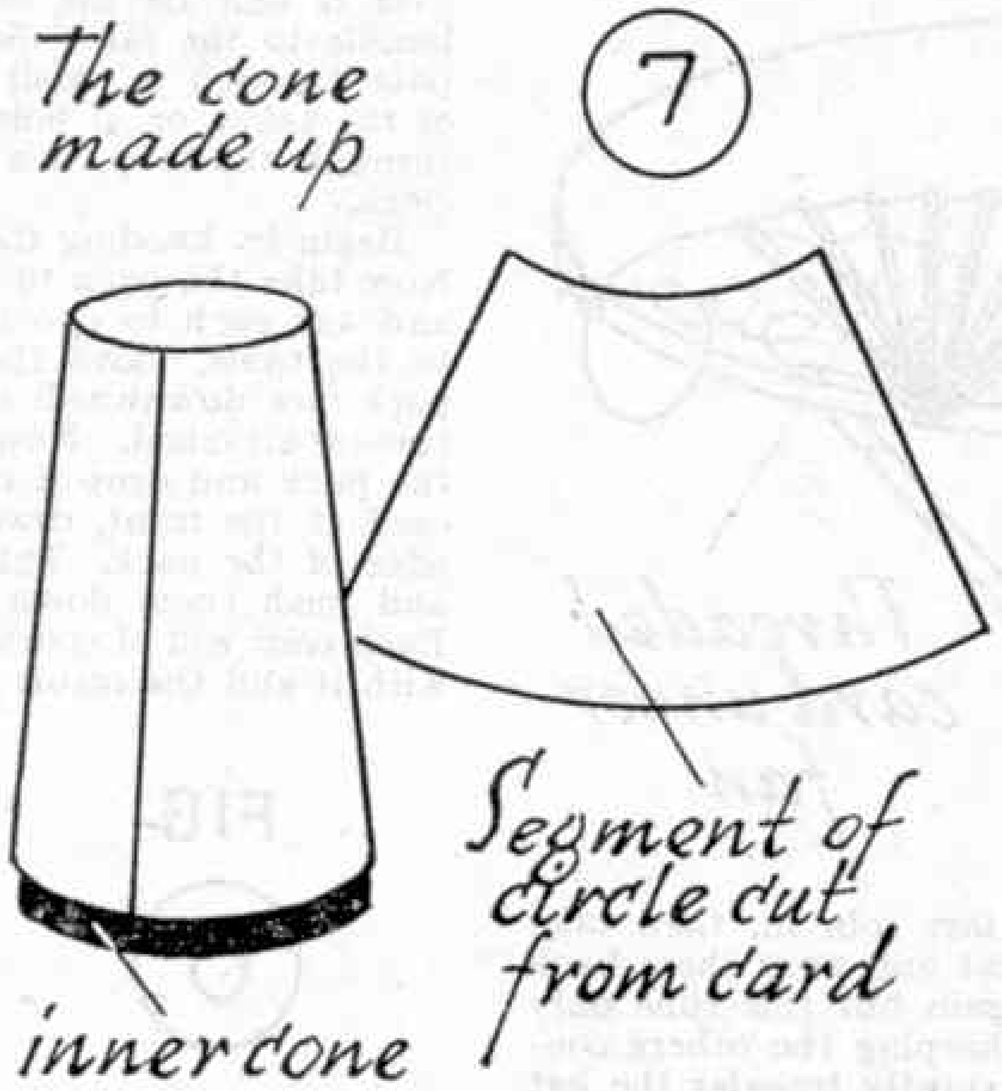


FIG 7

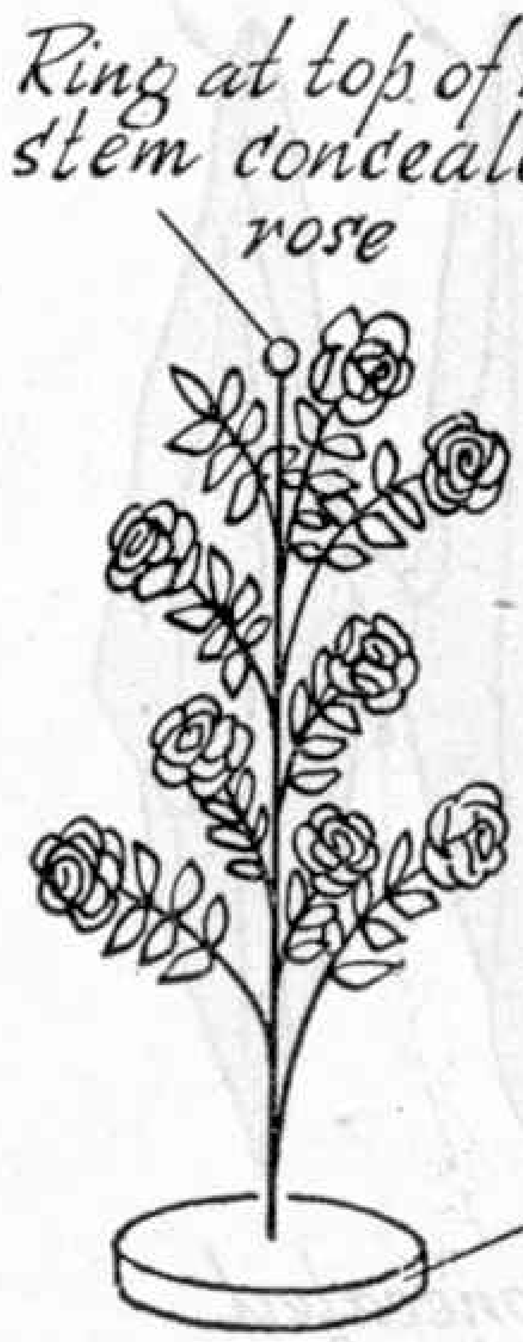

Ring at top of main stem concealed by rose
Rose bush made from artificial flowers and leaves on wire frame
Disc which fits into top of flower pot

FIG 8

How to do it. Three of the handkerchiefs are tied together to start with, but they are held by the opposite corners, as shown in Fig. 6, and so appear to be separate. When you come on for this trick, these three knotted handkerchiefs are gripped between the first and second fingers of your left hand. Of the other three handkerchiefs, one is held between your third and fourth fingers and the other two between first finger and thumb.

Begin by saying "Here is a very difficult piece of magic. You need six handkerchiefs. If you're wizard enough to produce those these days, you're wizard enough." Now count off three handkerchiefs. "One," and you take one of the two held between finger and thumb and hold it up. "Two," and you take the second one from between finger and thumb and hold up the two together. Now, hold your breath, here comes a piece of sleight of hand. "Three." You appear to take a third handkerchief, but what you really do is to place the two you have just shown, in between the second and third fingers of your left hand (at present vacant) and take away the three knotted ones from between the first and second fingers. All this talk of first and second and third and fourth makes you feel you've get twelve fingers and eight thumbs, I know, but just try the movement calmly in front of a mirror and after about two goes you'll find no difficulty about it.

Lay the secretly knotted handkerchiefs over the back of the chair and openly tie the three separate handkerchiefs together in a chain. "Exceedingly oriental people believe it is possible for one man to be pricked and another man feel the pain. I like the idea very much. Think what fun it would be to eat all the green apples you like and let the man the tree belonged to get the collywobbles. Now let me show you something slightly similar, but not a bit the same. Here are three handkerchiefs which I lay on this chair. Now I'm going to tie these other three handkerchiefs together. Guess what's happened to the other three handkerchiefs? They have tied (Cont. on page 454)

FIG 9

Putting outer cone over inner cone as the screen is removed (view from back)

Dinky Toys and Supertoys

Standard "Vanguard" and Foden 14-Ton Tanker

WITH the coming of the now famous "Vanguard" the Standard Motor Co. Ltd. concentrated on the production of this single model, and other Standard cars have now been dropped entirely. The model is a splendid example of modern

The Standard "Vanguard," Dinky Toys No. 40e.

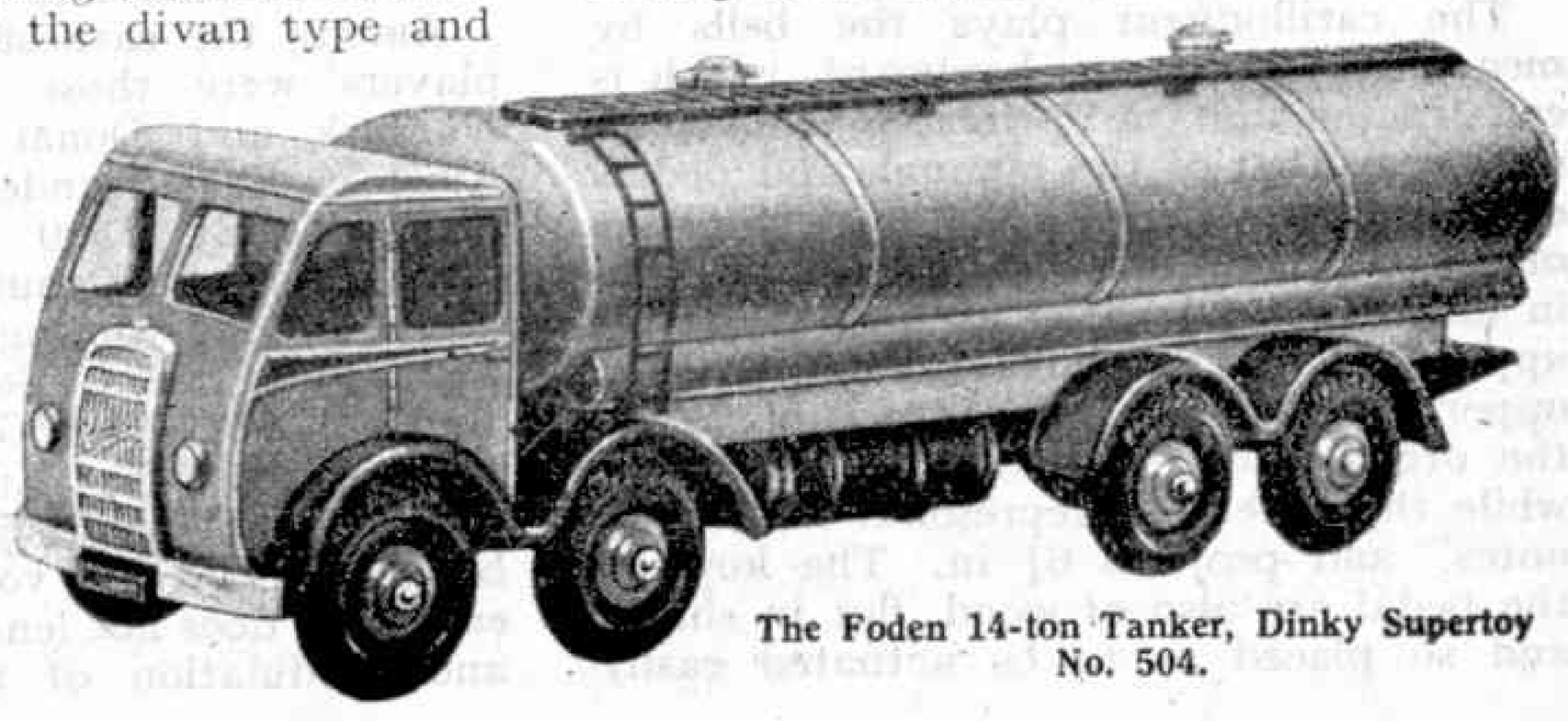
style, specially designed for use abroad as well as in Great Britain. It has a 2-litre engine developing 68 b.h.p. at 4,000 r.p.m., giving a maximum speed on top gear of 50 m.p.h.

This handsome car was an obvious choice for a new Dinky Toy. A striking feature that will immediately attract notice is the new front look. The radiator shell that in various forms has been characteristic of the front view of British motor cars of the past has been replaced by horizontal chromium-plated louvres, which are set low down and extend over rather more than half the width of the car. A deep and substantial bumper curves round the front beneath the louvres, and the front wings have straight tops that merge into the lines of the body, with headlamps set in. The body too is wide and gives ample seating accommodation. The front seat is of the divan type and provides room for two passengers in addition to the driver.

The Dinky Toys "Vanguard" reproduces well the features that make its original so imposing. The lines of the bodywork are splendidly followed in the model; the louvres and other special features at the front already referred to are so faithfully reproduced that there can be no mistaking the original of this miniature, a very handsome addition to the Dinky Toys series.

The lower illustration on this page shows the Foden 14-ton Tanker, the latest introduction to the Dinky Supertoys range, a very fine production that will be greeted with delight by all enthusiasts. Its chassis is that of the Foden 8-wheelers, Dinky Supertoys Nos. 501, 502 and 503, which have already established a great reputation, and on it is mounted a really magnificent representation of a tank for carrying petrol and other liquids. The design of the tank is completely modern. It is oval in section, with a ladder at the front for climbing up to the top walk or platform, giving access to the filler caps. On each side of the tank, tucked away below it, are representations of the containers for the hose used for delivering the petrol or other liquid that it carries.

The whole model has a splendid effect. It is massive in design and beautifully enamelled, the chassis in red with red wheel centres, the tank in a pleasing shade of grey, and the ladder and top walk in black. The bright radiator and bumper also are helpful in giving the pleasing appearance that makes these Dinky Supertoys splendid additions to any layout. A garage often forms part of such a layout, and where a set of Petrol Pumps (Dinky Toys No. 49) is installed it is fine to see this giant tank arriving to fill up the underground tanks.



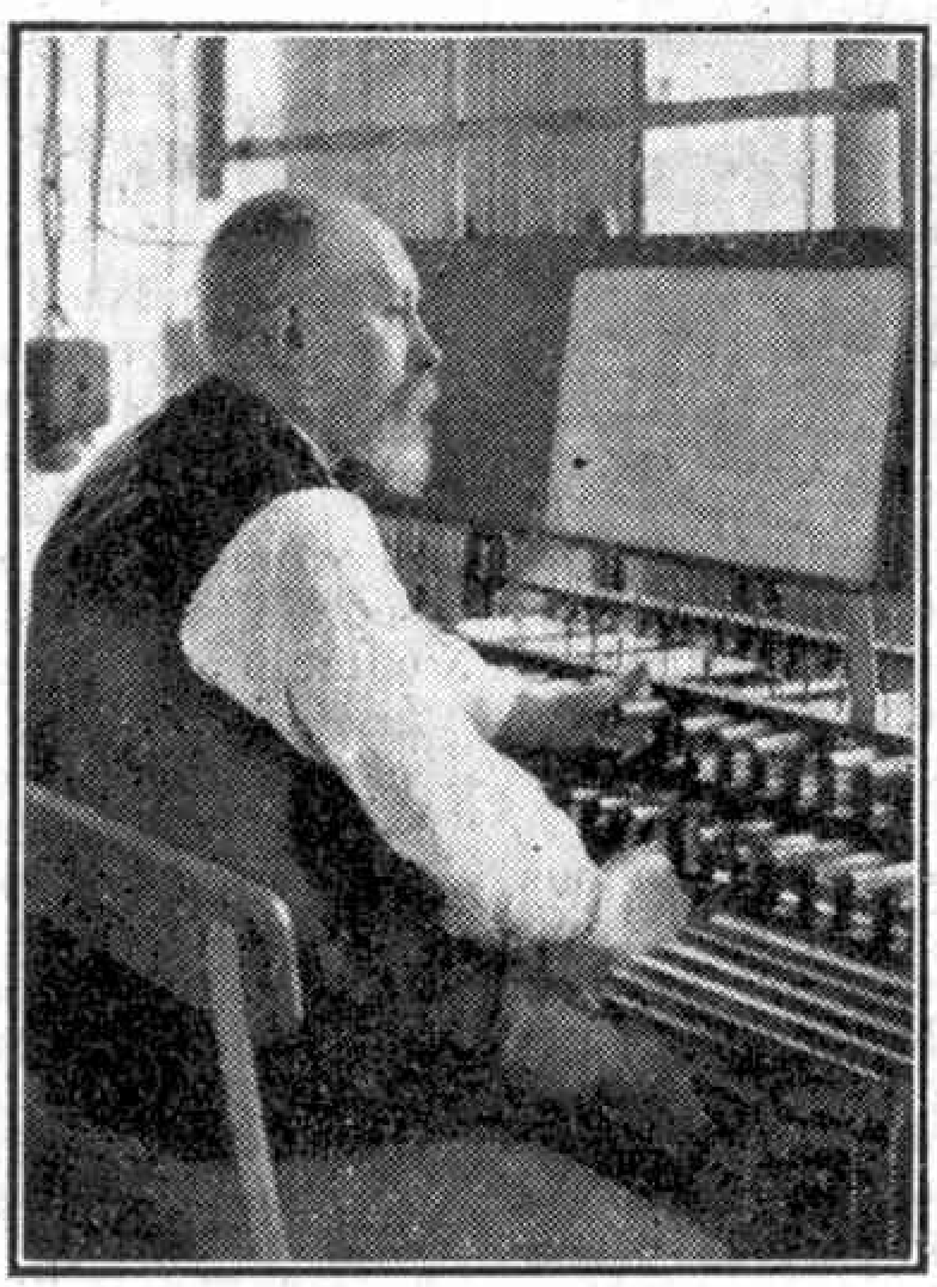
The Foden 14-ton Tanker, Dinky Supertoy No. 504.

The Bells of the Carillon

By Ernest Morris, F.R.Hist.S., F.R.G.S.

THE playing of the bells of a carillon gives music of the kind aptly described by Charles Lamb as that "nighest heaven." A carillon is a set of bells tuned to the notes of the chromatic scale, upon which music in two or three parts may be played, that is airs with accompaniment, sonatas, fugues, fantasias, and similar music. The bells hang stationary and are played either by the carillonneur, or bell-player, or automatically.

The smallest number of bells to which the term "carillon" may be applied correctly is two chromatic octaves consisting of 25 bells. Any less number would be more precisely called a "chime," and upon so limited a scale only music in one part is possible, bell-changes and single-note phrases. The number of bells in a carillon may extend to 50 or more. A range of four octaves consisting of 49 bells affords the carillonneur generous scope for the expansion of his art. The size of the largest bell distinguishes the character and importance of a carillon more definitely than does the number of bells. For instance, a carillon of 40 bells with largest of three tons weight is much more important than one of 44 bells with the largest weighing say only 1½ tons.



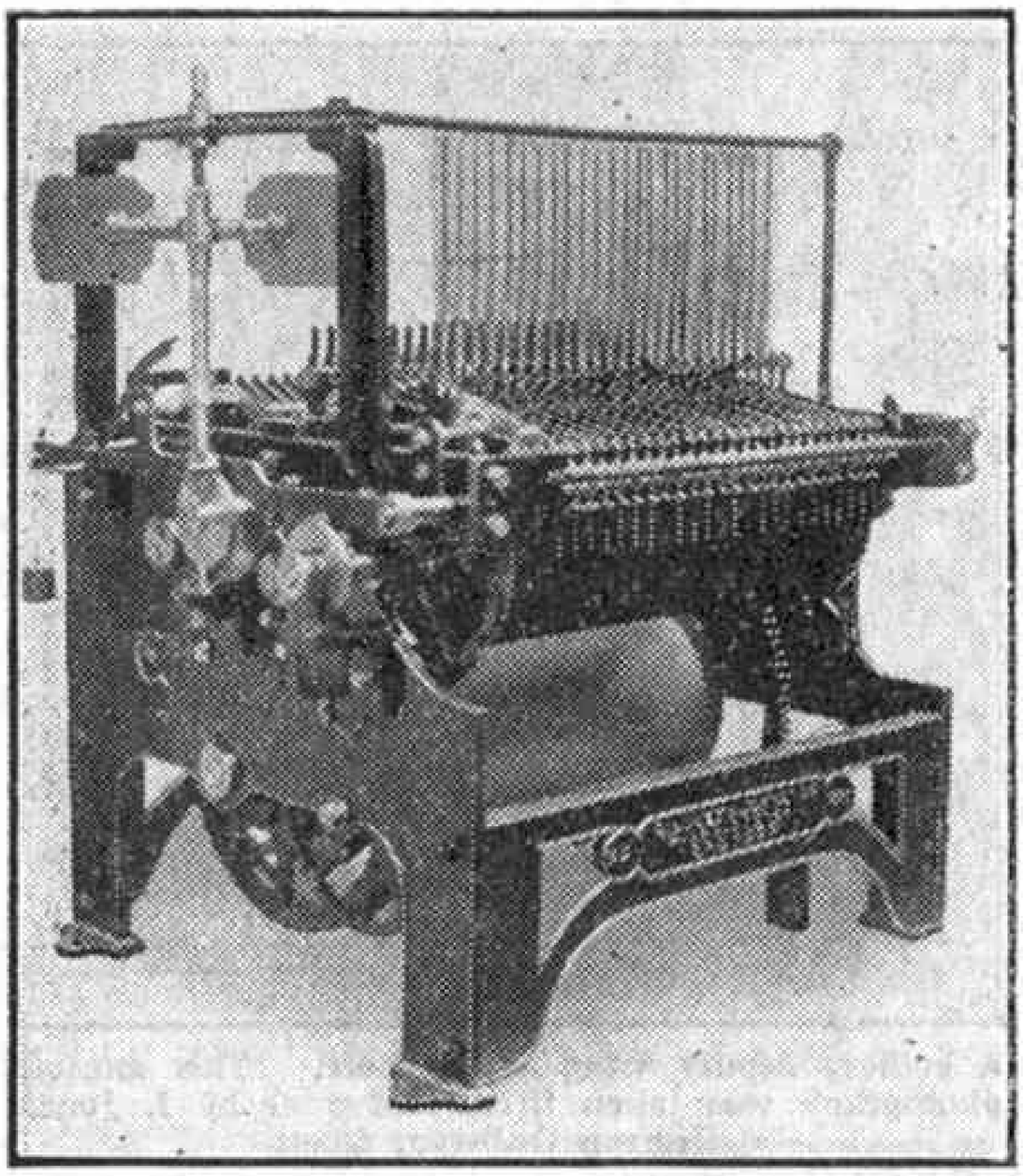
The Bellmaster of Antwerp at the keyboard.

The carillonneur plays the bells by means of a clavier or keyboard, which is constructed on a principle somewhat similar to that of the manuals and pedals of an organ. The keys of the manual are made of wood, round in shape and ¾ in. in diameter, and there are two rows, the upper one 4¼ in. above the lower. The upper row represents the "black notes" of the organ or piano and projects 3¾ in., while the lower row represents the "white notes" and projects 6¼ in. The keys of the pedal are also of wood, flat in shape, and so placed as to be actuated easily by the feet of the carillonneur. They resemble closely the arrangement of the pedals of the organ, and the pedal compass is usually about an octave and a half.

The keys of the clavier are connected to the clappers of the bells in a manner similar to that of the tracker of the organ, bronze wires and steel transmission bars in the carillon taking the place of wood in the action work of the organ. The bells of a carillon hang in their framework at different stages or levels, the largest bells being in the lowest tier and the smallest in the uppermost. The higher and more spacious the tower, the better is the musical effect of the bells.

The automatic arrangement for playing a carillon is similar to that of the chimes worked by a clock, except of course that it is on a much larger scale. The revolving cylinder of the arrangement is like that of a giant musical box, and its exact designation is "carillon à cylindre" or "carillon à tambour." Tunes are set upon the cylinder by the carillonneur and by periodic changing are made appropriate to the season of the year. In order to secure the quick repetition of a single note, some bells are equipped with as many as five or six hammers.

Among the earliest of these automatic players were those at Lille in Artois, Dunkirk and Douai in West Flanders, Alost in East Flanders, and Zierikzee in Zeeland. By 1500 large chiming sets were found in churches, abbeys, and hotels-de-ville throughout what is now Northern France, Belgium, the Netherlands, North West Germany, and—on a smaller scale—in England. Mechanical playing, though crisp and accurate, and bringing out a full volume of sound from each bell, does not lend itself to expression and modulation of tone. The carillon,



A carillon tune-playing machine.

like other instruments, requires the human element to give the best music.

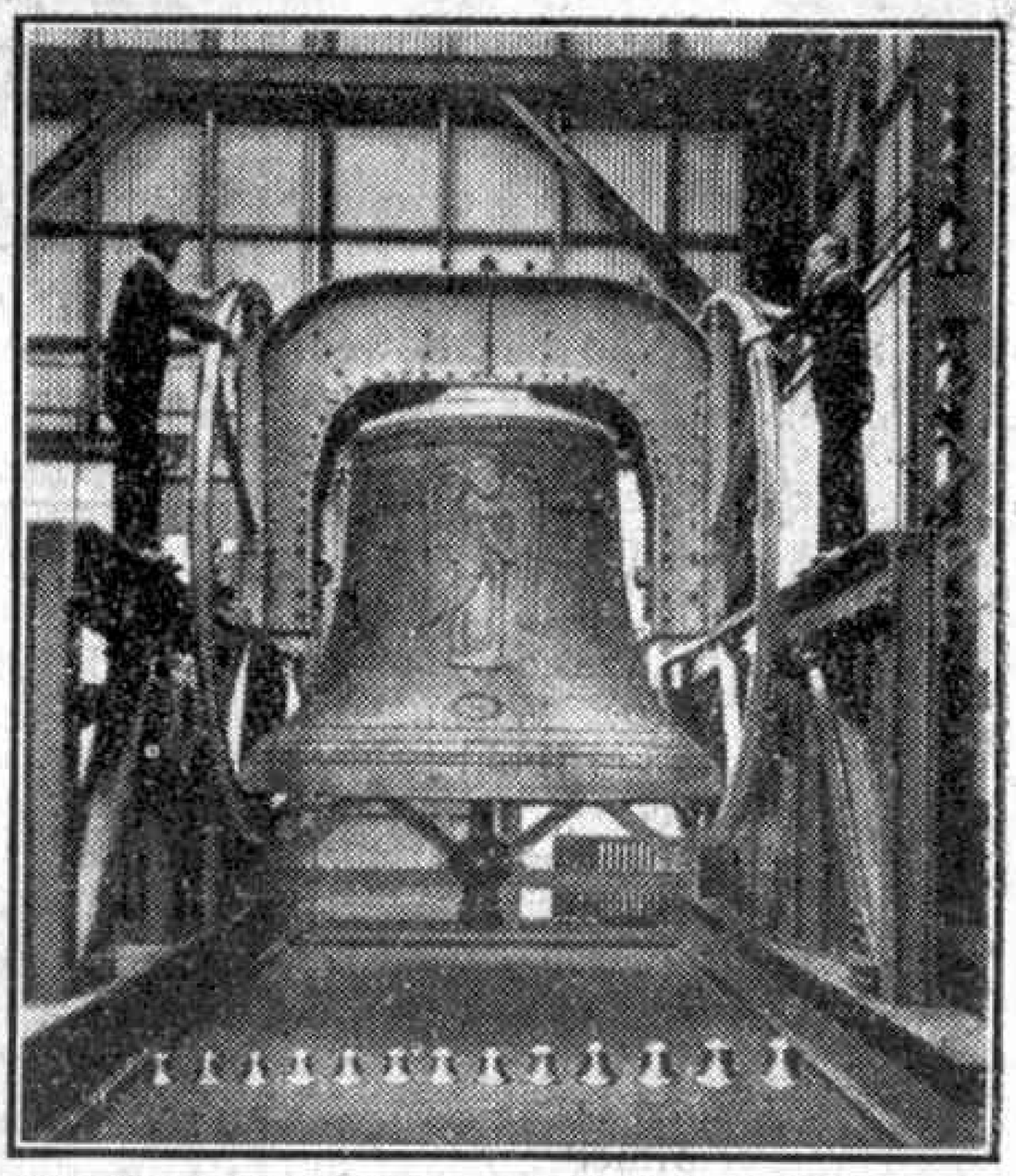
The most modern adaptation for playing carillons is electro-pneumatic in operation. It does not require the skilled manipulation of the clavier levers, while the automatic player-band of paper needs no skill whatever, being started by push button or clockwork release. Compressed air at low pressure, acting on pistons, is used to give the actual blow, and low voltage direct current provides the connections between the keyboard or automatic-player and the air valves of the pistons.

The power plant, usually placed in the clavier chamber, consists of a cast iron base plate, on which is mounted a standard motor wound to suit the local electric supply, a generator producing direct current at 25 v., an air-cooled compressor delivering air at a pressure of 25 lb. per sq. in., and the remote control unit for starting and stopping. The pistons and cylinders are arranged in gangs and are proportioned to the size of the bells to be operated. Each piston has an air-valve operated by an enclosed solenoid.

The solenoids are interchangeable and are secured by bayonet-joint fastenings. The cylinders are mounted on air-receiver bases, and the complete units are placed in the room immediately under the belfry, and connected by means of a series of standard rollers and cranks to special clappers attached to the clavier. Thus it is possible to obtain the best results from both methods of operation, the mechanically-operated clappers being adjusted to give full blows of good carrying power, and the clavier clappers adjusted to suit the more delicate manipulation by the carillonneur.

A standard ivory keyboard is fixed. This has practically the same touch as an organ, and on a key being depressed the 25 v. circuit is closed and operates the solenoid on the corresponding piston and cylinder. The keyboard can be fixed at any distance from the tower. The automatic player has interchangeable paper bands perforated by special machinery in accordance with the music desired. Many of these installations have gone out to America and elsewhere from the British bellfounders with newly erected carillons.

Belgium and the Low Countries were the original home of the carillon. There we may find belfries furnished with sets of bells varying from a few pounds to several tons in weight. There are carillons of 20 to 30 bells even in small towns, while the larger cities have sets of 40 or more. During the last 20 years the carillon has become more and more popular. Large carillons have been supplied to America, Canada, Australia, England and other countries. During market hours, at festivals and in mid-day and evening concerts a great variety of popular music is played by carillonneurs.



The largest tuned bell in the world. It weighs over 18 tons and is the bourdon of the great carillon in Riverside Church, New York.

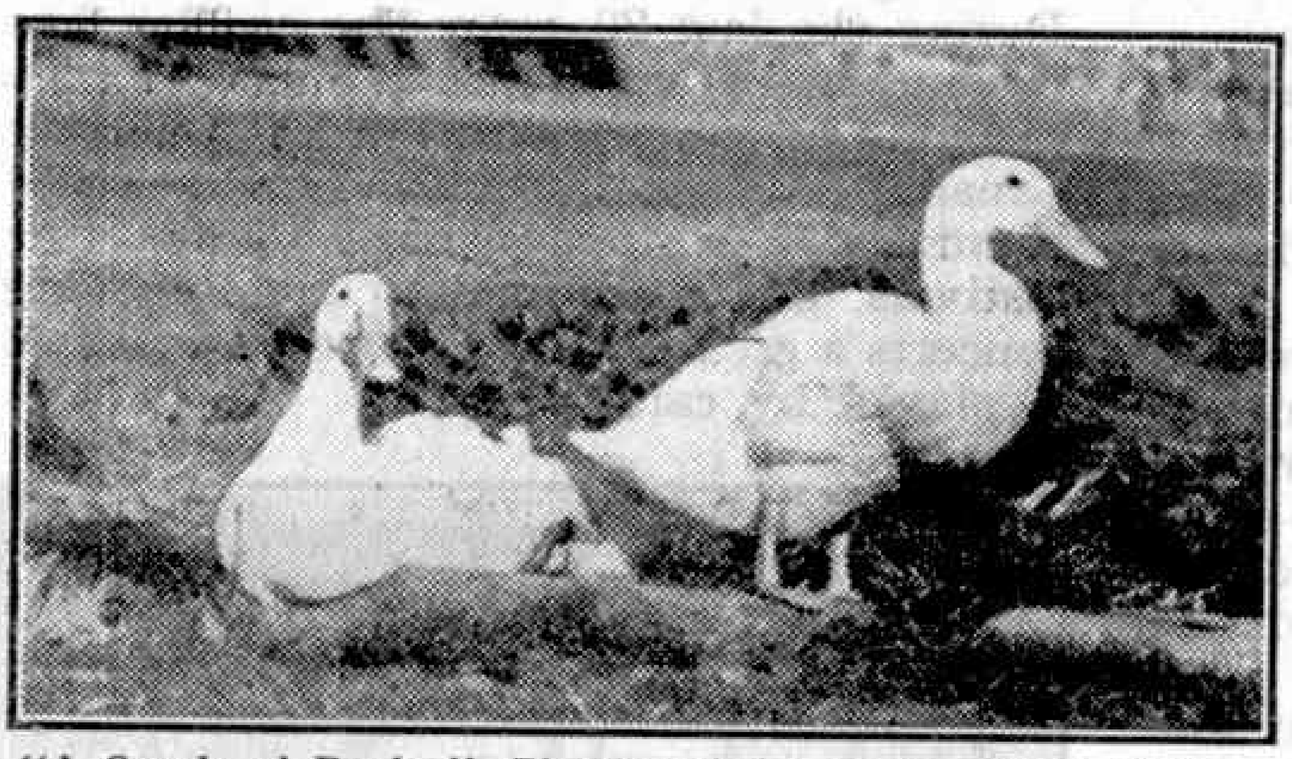
Photography

Making Your Own Album

IN the October *"M.M."* we described how to trim and mount your holiday snapshots in an album. The supply of albums is still limited, but if you are not fortunate enough to possess one you can easily make a loose-leaf album of the "paste-on" type.

You will need two pieces of thick cardboard for the covers, and the loose pages can be of either good quality drawing paper or thick brown paper free from folds or creases. Mark out the exact size of page required upon a piece of thin cardboard and with this on top as a guide trim several pages at the same time, using a sharp pocket knife and a straight-edge. Cut the pages to slightly smaller dimensions than the covers, so that the latter will provide a protective margin when the pages are enclosed between them;

A colliery deputy firing a shot hole. This unusual photograph was taken in a coal mine by J. Jones, Duffryn Onllwyn, Glam.

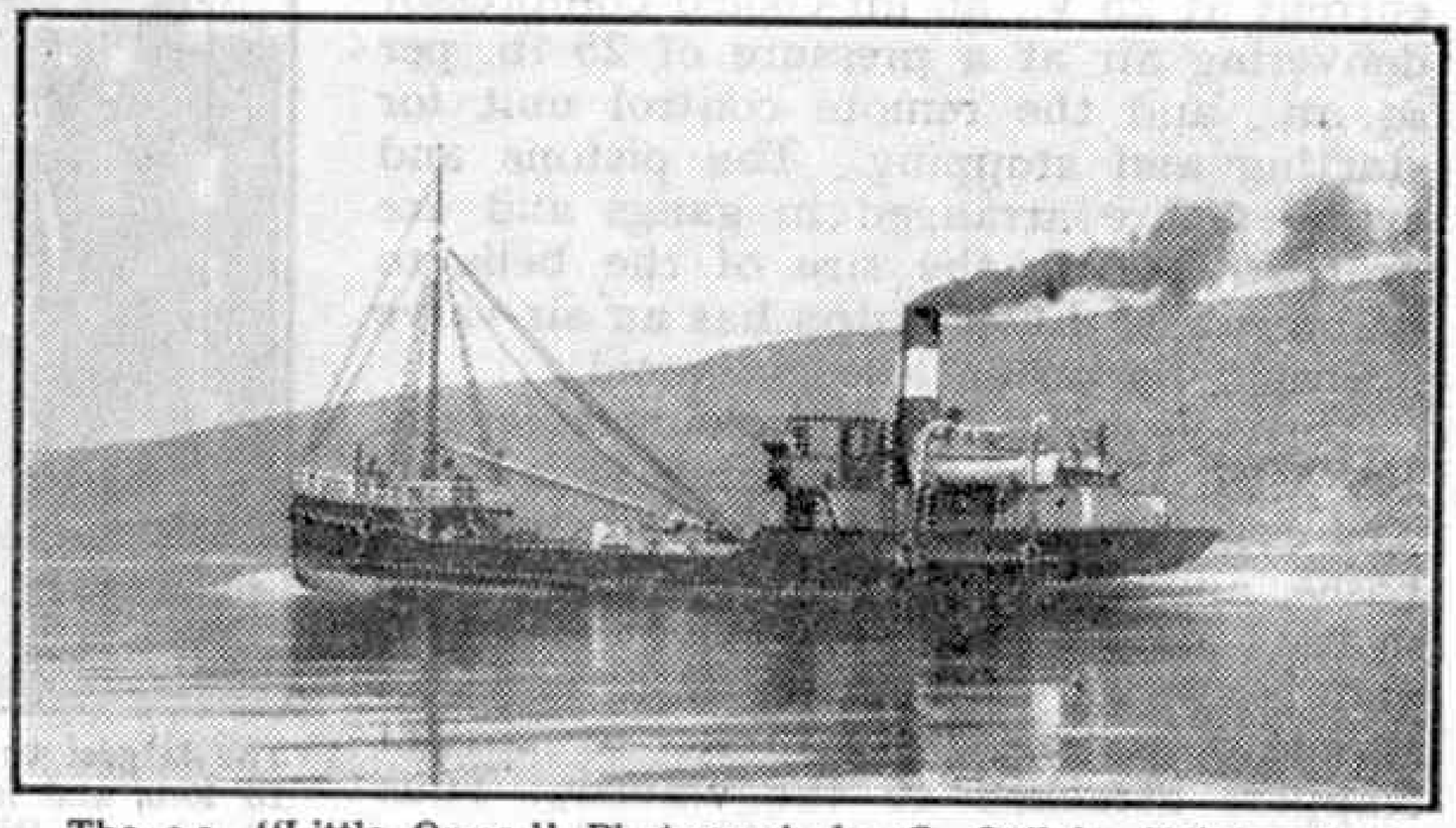


"A Couple o' Ducks." Photograph by D. R. Abrey, Hull.

and 1½ in. should be allowed at the left-hand side for binding the leaves together.

Next cover the cardboard with stiff brown paper, gumming it into position and allowing a projection of 1½ in. at one end. When both sides of the cardboard have been covered in this way gum the projections together to form a stiff "tongue." Next pierce four equidistant holes in the tongue of the front cover; this can be done with a bradawl. The trimmed pages can now be inserted between the covers, and they must be so placed that the left-hand edges are flush with the tongues of the covers. Using the holes in the tongue of the top, or front, cover as a guide; pierce through the pages and the bottom cover, taking care to have the assembled album on a spare piece of thick cardboard or wood and not on a good table for this job! Finally thread a thick cord through the holes and tie in a bow on the front cover, and the album is ready for use. Some people use ribbon for this purpose but it is not so good for untying when the pages are re-arranged, and creases soon spoil its appearance.

If you are good at lettering you can easily do an artistic title on the front cover, but even if it is only carefully written in ink it will look neat.



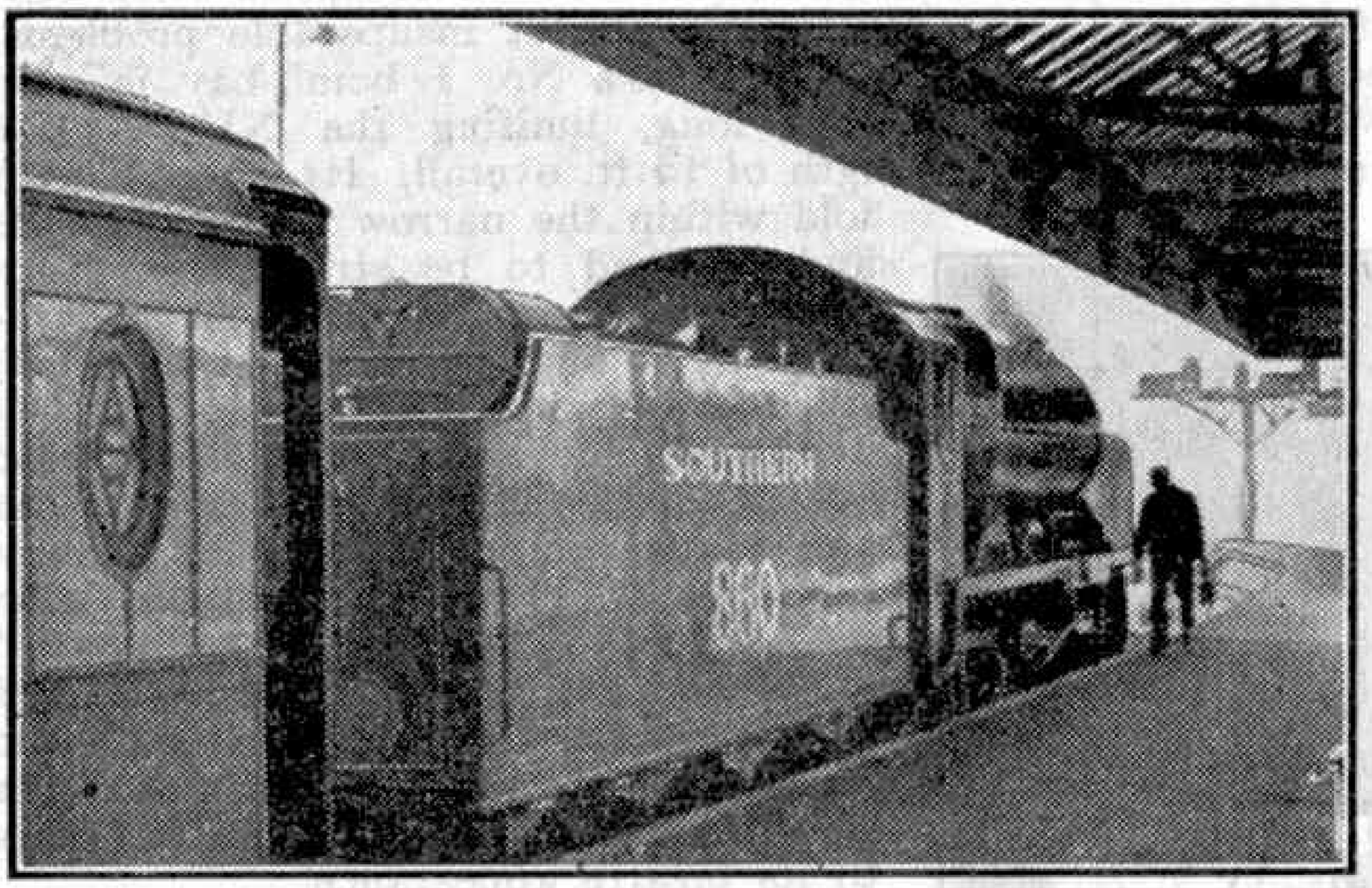
The s.s. "Little Orme." Photograph by G. Ogilvie, Edinburgh 4

Have You Ever Thought About This?

What Happens Before the Train Starts?

By "Shed Superintendent"

AFTER finding your seat in the train at a terminal station, you probably decide to have a look at the engine. It backs on to the leading coach, and while you are making a note of the name and number, certain interesting operations occur which may escape your notice. Take, for instance, the process of coupling up. This may be performed by a shunter, but in some areas it has always been, by tradition, the responsibility of the engine crew. The Driver is attaching "his" engine to "his" train, and he prefers his Fireman to adjust the screw-coupling to a nicety. If it is too loose, an uncomfortable bumping motion will be felt while running; if it is too tight, there may be difficulty and delay in uncoupling when the engine is changed at an intermediate station. The buffers must be gently but not fully compressed, and some Drivers apply a few drops of oil to the buffer faces of the tender as an aid to easy movement between the tender and the leading vehicle. The Fireman stands clear until the Driver has compressed the buffers together, and then ducks down underneath them and connects the engine coupling to the hook on the coach. A spare screw-coupling is carried in the guard's van in case of need.



Southern 4-6-0 No. 860, "Lord Hawke," about to leave Waterloo with the "Bournemouth Belle." The fireman is returning to the footplate with the tail lamp from the front of the engine.

When the Fireman has coupled the vacuum brake pipes together, you may hear him call out "Blow up." The Driver thereupon operates the ejector on his engine to create the vacuum throughout the brake system on the engine and the train. The vacuum gauge needle can be seen slowly rising until the figure 21 is reached—21 inches of mercury is the usual working figure. If the needle rises too slowly, and falls immediately the ejector is shut off, there is a leak somewhere on the engine or train. The Carriage Examiner is hastily summoned to search underneath the coaches, while the Driver disconnects his engine and tests it independently. If the vacuum is created and maintained satisfactorily, the next move lies with the guard. He sees his van gauge indicating the correct vacuum, and thereupon operates his application valve in order to test the brake. This is an important rule. The guard has previously seen the Driver and taken his name and the engine number.

While the Driver is busy with the brake apparatus, the Fireman will remove the headlamp that was on the tender for the backward run from the Locomotive Depot. He takes it, and another from the locker, to the front to set up the correct head-code, and removes the tail lamp which was at the smoke-box end of the engine. Sometimes the lamp indication can be changed from red to white by means of a slide. Failure to remove the red indication would mean that the train would not get very far before being stopped by a Signalman!

The Fireman then returns to the footplate and if the preparation of the engine has been completed at the Depot, he will already have a good bed of fire on the grate and will not (*Continued on page 454*)

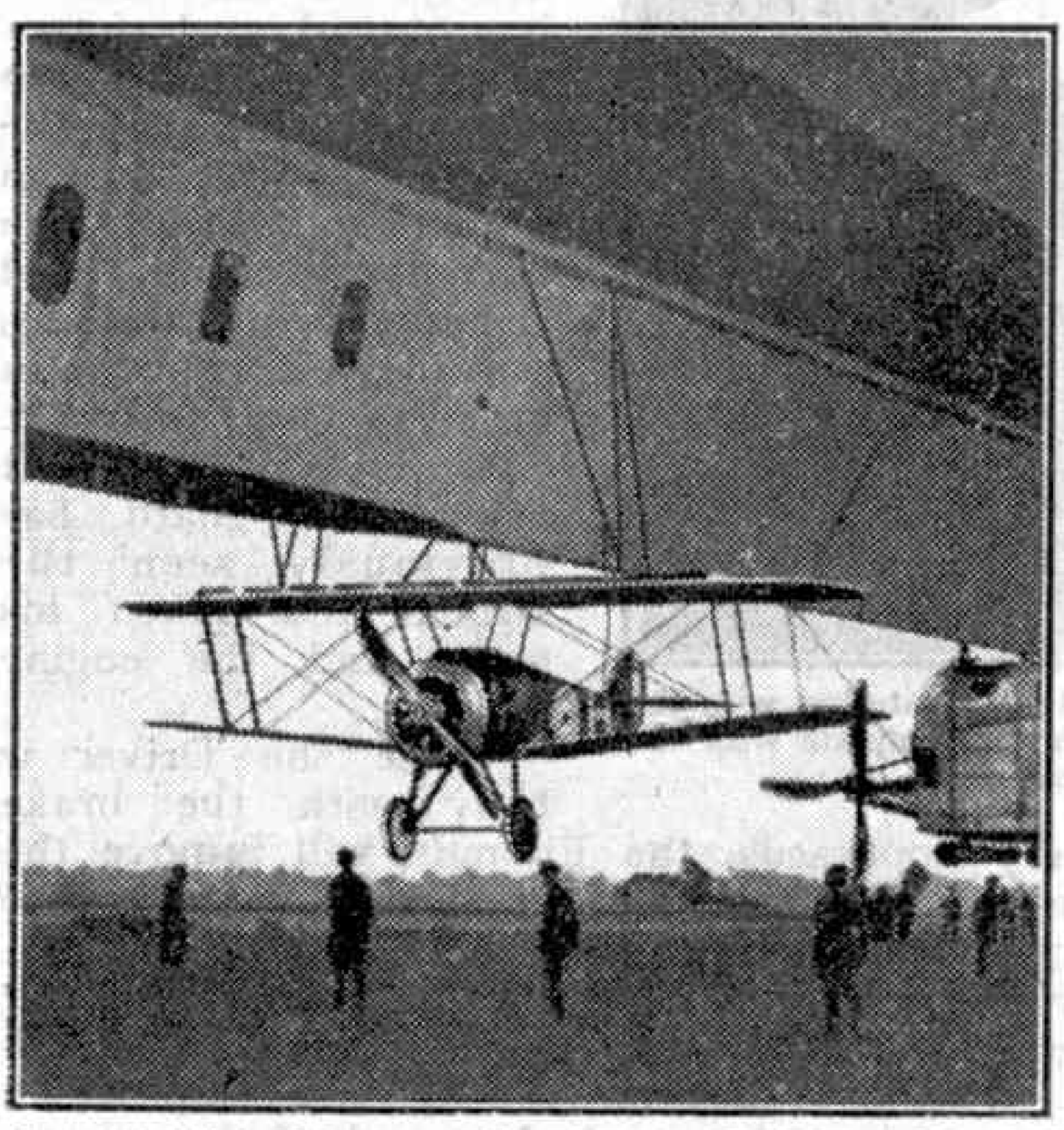
Parasite 'Planes

By John W. R. Taylor

"WE'LL be over the target in five minutes. Keep a sharp look-out for fighters."

Steadily the flight of giant Convair B-36 bombers drones on, each with an atomic-bomb clutched in its bomb-bay. Suddenly the navigator of the leading machine sees some black specks, far below but getting rapidly bigger. "Enemy fighters, 90 degrees port."

At once every gun-turret is trained on the climbing fighters, while a young man in flying kit opens a trap-door and disappears into No. 1 bomb-bay. Within a few seconds the bomb-doors hinge open, and what appears to be a stubby bomb is swung down at the end of a trapeze under the B-36. But the "bomb" is actually a tiny jet-propelled fighter 'plane, manned by the pilot who entered its cockpit while it was still inside the bomb-bay. With a shrill whine its engine bursts into life, its little wings fold down, the release hook holding it to the trapeze opens and it streaks into action, guns blazing, side-by-side with fighters from the other B-36s.



Sopwith "Camel" mounted under the British airship R23 at Howden in 1918. Photograph by courtesy of Imperial War Museum, London S.E.1.

While they beat off the enemy attack, the B-36s fly steadily on, drop their bombs and start the long journey home. Soon the fighters catch up, hook themselves on to their trapezes and are hauled up into the bomb-bay, ready to repel the next attack.

That probably sounds like a "science fiction" story—a dream or, perhaps, nightmare of the future. But the first of the little bomber-based fighters has already flown in America, and squadrons of B-36s to carry them are being built for the U.S.A.F.'s long-range strategic bomber groups.

The fighter, designated XF-85 Parasite and named "Goblin," has been built by the McDonnell Company, and, as might be expected, looks like nothing else that has ever flown. Its designers were confronted by almost insuperable problems, for the B-36's No. 1 bomb-bay is only 16 ft. long, limiting the XF-85 to a length of 15 ft. overall. Its wings had to fold within the narrow space available and yet had to be strong enough to extend in the airflow beneath an aeroplane averaging 300 m.p.h. at 40,000 ft. All the equipment of a standard jet-fighter, including a 3,000 lb. thrust Westinghouse engine, guns and radio had to be compressed into its stubby fuselage, which had to house also mechanism to "hangar" and "launch" it as necessary. At first it looked as if the tail also would have to fold, but McDonnells avoided this by giving the XF-85 a unique "X" tail unit that adds to its bizarre appearance.

The resulting fighter is the sort of thing that a test pilot must see in his most horrible nightmares, but it is a very practical and formidable little aeroplane for all that. Nor is it limited to one flight during each bomber sortie, for it can be refuelled while stowed in the bomb-bay of its mother-plane, its oxygen and ammunition can be replenished, radio and radar serviced, even limited structural repairs can be made.

So there is no doubt that the XF-85 gives new meaning to longe-range bomber striking-force, enabling the B-36s to venture far beyond the range of normal fighter escort in daylight.

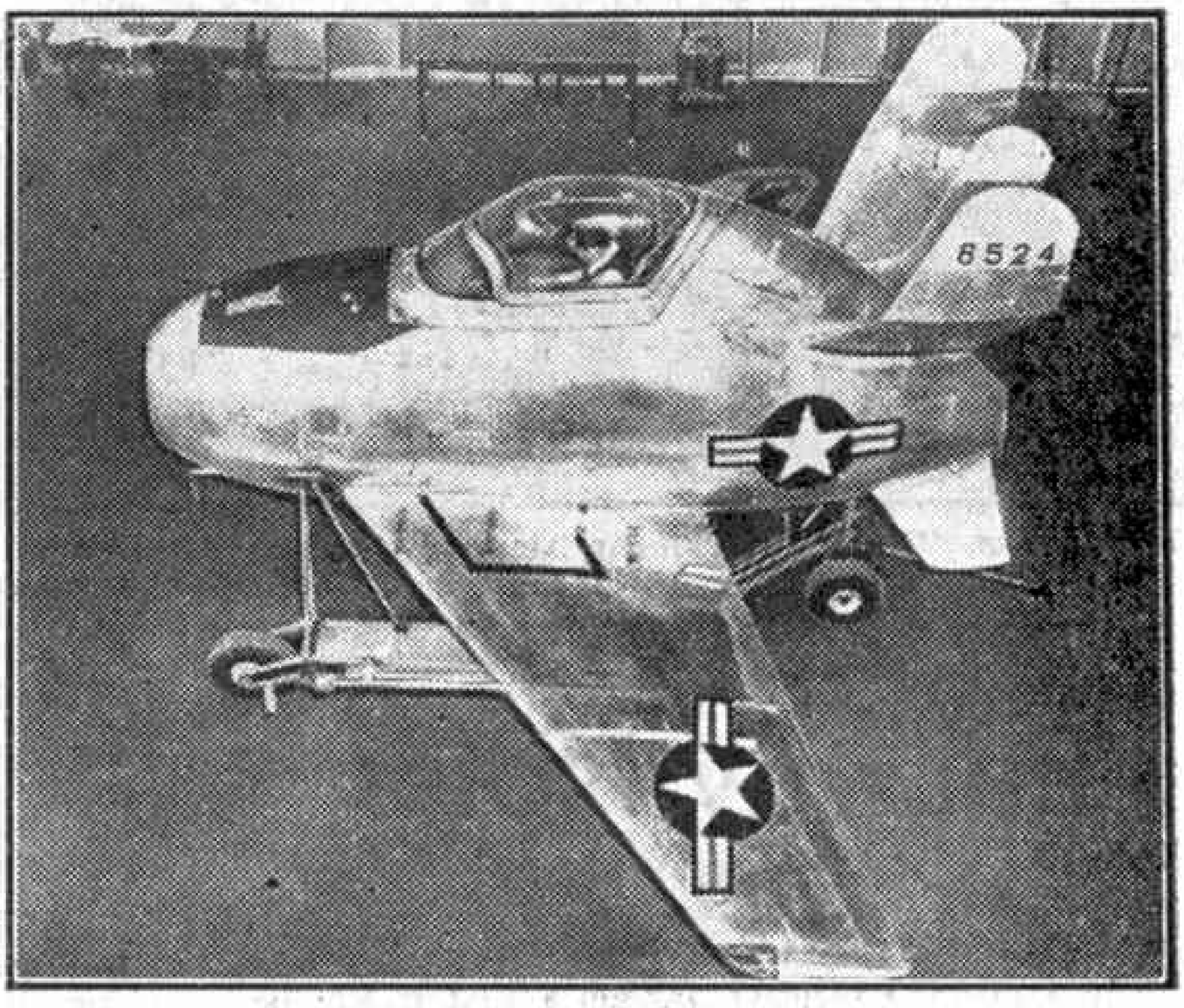
Of course, the idea of an airborne fighter is not altogether new; in fact the first experiments with one were carried out in Britain about 33 years ago. At that time German Zeppelins were making

a nuisance of themselves in raids on England, and our fighters were just not good enough to take off in the dark, climb up to the *Zeppelins'* height and shoot them down. In an effort to overcome this deficiency in our defences, an idea suggested by two naval officers—Commander Neville Usborne and Lieutenant de Courcy-Ireland—was tried out. A standard B.E.2C biplane was slung under an airship, the idea being that the whole contraption could be floated up to the usual Zeppelin operating height, where its crew could sit nice and quiet, waiting for a *Zeppelin* to put in an appearance. Having spotted one, they could then release the aircraft from its gas-bag, start up the engine and give chase, with full tanks.

Unfortunately, during a test flight in February 1916, the catch holding the tail of the aircraft to the airship failed to open at the same time as those holding the wings. De Courcy-Ireland courageously climbed up the fuselage to release it. But as he did so the catch opened and the aircraft spun down to earth, throwing him off and also killing Usborne who was still in the cockpit.

After that the scheme was dropped, but it was revived later in a different form when Commander John Porte, R.N., mounted a small fighter on top of one of his big flying boats. He proposed that the two should cruise about together until a *Zeppelin* was sighted, when the fighter's engine could be started and it could be released to give chase. The scheme worked very nicely and, twenty years later, bore fruit in the highly-successful Short-Mayo Composite aircraft, which was illustrated in the August 1948 "*M.M.*" But these early projects were designed to increase a fighter's endurance for high-altitude patrol and attack duties, and not to enable them to defend their carrier-aircraft. They were thus in a rather different category from the new McDonnell XF-85.

The first example of a personal defence fighter being carried by aircraft did not occur until 1918, when a Sopwith "Camel" was mounted under the British airship R.23 at Howden. Heavy casualties suffered by *Zeppelins* towards the end of the war had proved how vulnerable to fighter attack were these slow, highly-inflammable gas-bags. As no fighter could carry enough fuel to escort them on a long mission, the only solution seemed to be for them to carry their own fighters. Lieut. R. E. Keys, D.F.C., successfully flew the "Camel" from R.23, proving the scheme practicable. In 1925 the late



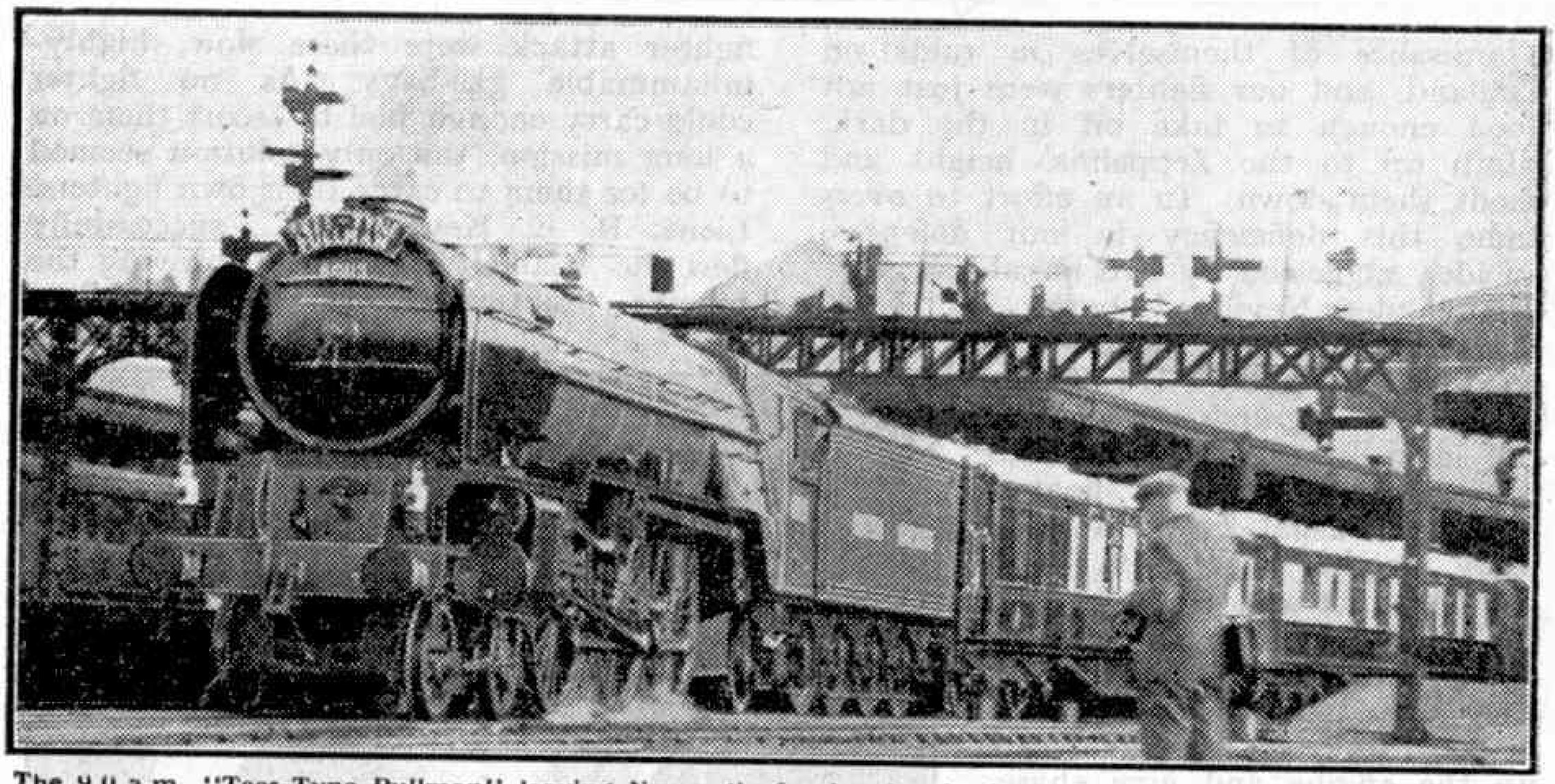
The McDonnell XF-85 Parasite fighter, designed to fit into the bomb-bay of a Convair B-36 bomber. Photograph by courtesy of the United States Air Force.

Squadron Leader R. A. de Haga Haig went one better by flying a de Havilland 53 "Humming Bird" from a trapeze under the airship R.33, and then re-engaging it and rejoining the airship's crew.

The Americans too had achieved considerable success with airship-based fighters by 1925, and thereafter several of their large military airships were provided with personal defence fighters, which were stowed internally when not in use.

Unfortunately, the loss of the British R 101 and the American "*Akron*" and "*Macon*" in the 1930s led to the abandoning of large airship development in both countries, and the parasite fighter's short period of service was abruptly ended.

Not until to-day, when bombers can range far beyond the endurance of their fighter escort and are big enough to carry a fighter in their bomb-bays, has the old idea been revived. Even now, the advent of high-speed jet-bombers, able to fly fast enough to elude enemy fighters, may once more put the parasite back on the shelf. But, for the present, the little XF-85 looks like filling most usefully a gap in America's airborne striking power.



The 9.0 a.m. "Tees-Tyne Pullman" leaving Newcastle for London behind a new "A1" Class 4-6-2 No. 60115. Photograph by S. Teasdale, Newcastle-on-Tyne.

Railway Notes

By R. A. H. Weight

National and Scottish News

The Railway Executive announce that it will be standard practice in future to describe running lines as follows. Where there are two passenger tracks only, the primary lines are to be called "Main." Where there are four passenger or similar through lines, the primary or principal ones will be styled "Fast"; the others "Slow," or in certain cases "Relief." Additional running lines not authori ed for passenger train working will be named "Goods" where they are continuous for some distance.

Provision is also made in the new list of descriptions for "Passenger Loop," "Goods Loop" and "Platform Loop" covering short lengths of extra running lines, as well as bay platforms, refuge sidings and shunt spurs. Most of these namings will be self-explanatory, as they have been in use for years in many cases, though in the past the separate companies have employed variations such as "Main," "Local" and "Independent." At very busy points, where a multiplicity of tracks exist, the present plan of numbering the groups of up or down lines will probably continue.

The Berwick-Dunbar section of the East Coast main line in Southern Scotland was reopened at the end of October last, only 11 weeks after the destruction of seven bridges and five serious subsidences, as well as the obliteration of several miles of track on account of flood and storm damage. This reflects great credit on the officers and personnel concerned. Temporary bridges of military type have been installed in some cases, while long stretches of roadbed and track have been entirely rebuilt and relaid high above the coast, involving the use of 2,300 tons of steel piling, bridging trestles and similar material. Hundreds of workmen have been "living on the job" in railway coaches and vans converted into dormitories or messrooms. Severe speed restrictions will be unavoidable for some time, but the direct line is in use again so that trains are running much more nearly to timetable schedules.

A large scale modernization has been effected at the Polmadie locomotive depot, Glasgow, which provides power for West Coast and other important services. There is an electrically controlled coaling plant of large capacity as well as a new plant for handling ashes, which are washed, then conveyed on electrically driven belts to a big bunker, whence they are discharged into the wagons that have brought coal.

Southern Tidings

Just before the regular employment of "Schools" engines on the London-Newhaven boat trains this autumn, came details of another excellent "Atlantic" run with a heavy summer load of about 415 tons when "H2" "*Trevose Head*" exceeded schedule from Newhaven to Victoria by only ¾ min., although suffering two relaying slacks as well as three signal slowings. The net time was little over 76 min., compared with the 81 min. allowed; maximum speed was 72 m.p.h.

Several of the 4–4–2s are in need of heavy repair, which may not be considered worth while. Light "Pacifics" Nos. 21C 133–8 and 21C 140 are stationed at Brighton for working through trains to Salisbury, etc. New "Battle of Britain" 4–6–2s Nos. 34080–2 are allocated to Ramsgate; new "Merchant Navies" Nos. 35021–2 to Exmouth Junction, Exeter.

Oil firing is being discontinued on various main line locomotives, which are reverting to coal generally. Black painting, with lining of red, grey and gold, is being employed to a considerable extent at Eastleigh on some "Schools" and older passenger tender and tank engines.

It is understood that 4–4–0 No. 910 "*Merchant Taylors*," recently taken out of traffic at St. Leonards shed for general overhaul, had run 114,000 miles since last in Works. Another "Schools" locomotive at the same depot not long ago covered 120,000 miles between shoppings. Both achievements were particularly creditable.

Eastern and North Eastern Regions

No. 60115. the second of the new "A1" 4–6–2 Peppercorn express engines, stationed at Gateshead, after quickly settling down to fast work, has been seen regularly hauling the "Tees-Tyne Pullman" from Newcastle to King's Cross and back, nearly 540 miles per day. Few trips had been missed up to the time of writing, when 60116 took over.

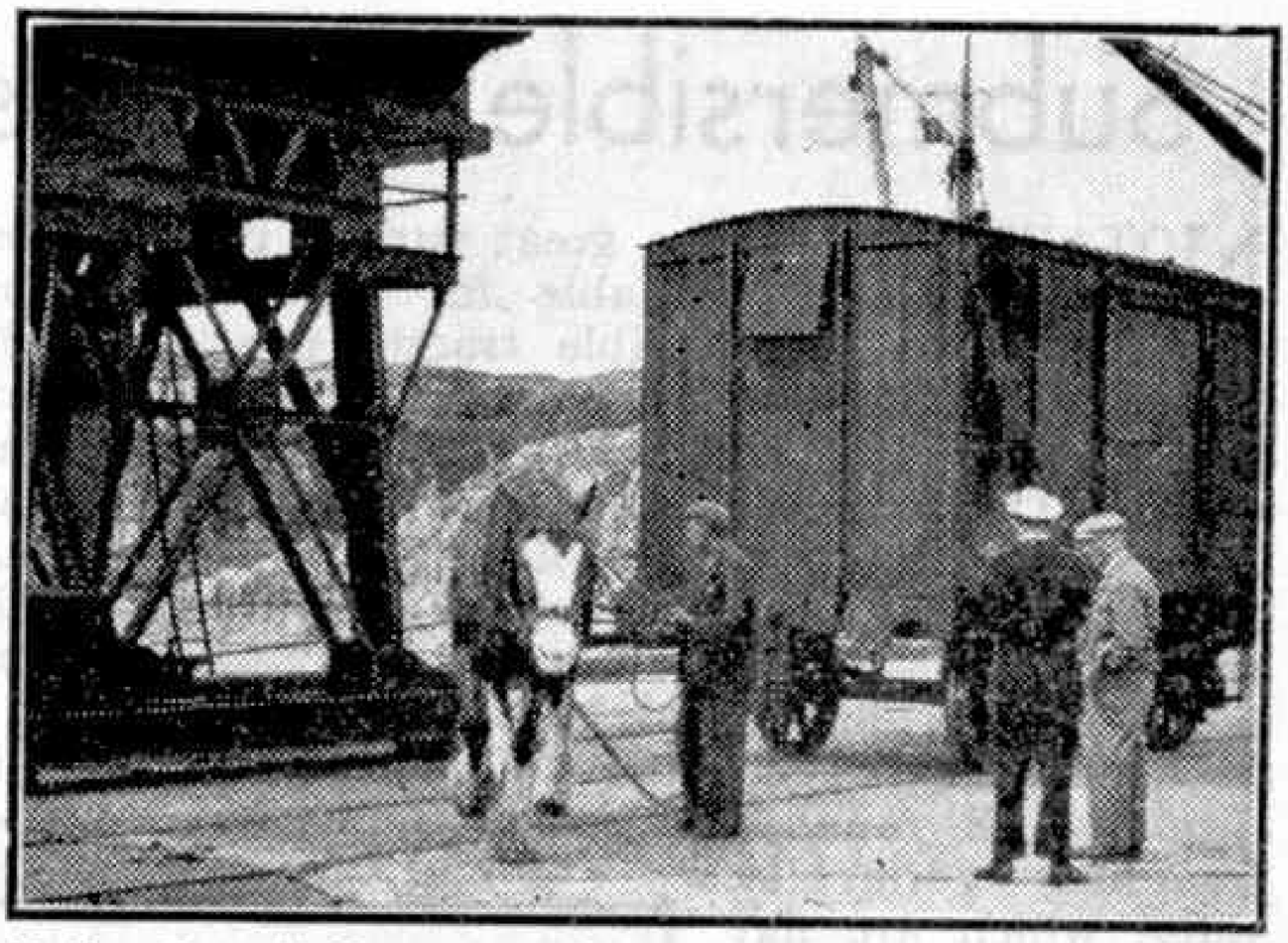
No. 60114 has been named "*W. P. Allen*" after a member of the Railway Executive, who began working life as an engine cleaner on the G.N.R. It is understood that the engine will be shedded at King's

Cross. Nos. 60116-8, built at Doncaster, and 60130-1, constructed at Darlington, of the same class, are also in service. Two of the famous G.N. "Atlantics," L.N.E.R. Nos. 3274 and 3285, after withdrawal from the active list, have been fitted with tall chimneys, extra coal capacity and piping, and supply steam to the large Crimpsall Erecting Shop at Doncaster Works, where many improvements in layout and equipment have taken place.

The present writer was fortunate in being able to log some first rate performances in October last when travelling behind "A2" 6 ft. 2 in. 4-6-2 locomotives of the latest design, especially having regard to the fact that maximum speeds are much lower now than in 1939, while service speed reductions have to be more numerous.

No. 60532 "*Blue Peter*" of York shed, hauling the 1.20 express from King's Cross, had 14 heavy vehicles, weighing quite 490 tons full, on the accelerated winter timing. There was severe signal delay before Potters Bar summit was reached, then two other slowings on the way to Peterborough due to track repair and, though good use was made of the clear stretches with a maximum of 72 m.p.h., arrival at the only stop was 7½ min. late. Following smart station work we left Peterborough only 4 min. behind time, the engine displaying fine acceleration and uphill capacity. Although nothing higher than 69 m.p.h. was attained, long distances were run in the "high sixties," with averages of about a mile a minute. There was a slowing for redrainage work at Hougham and signal checks near Doncaster, but following lively travel wherever possible over the final levels, arrival at York was 2 min. early. The 111¾ miles from Peterborough were covered in 123 min. actual, just over 2 hrs. net, or 3 hrs. 40 min. from London, Peterborough stop and delays included.

Going south from Doncaster, again with a stop only at Peterborough, No. 60537 "*Bachelor's Button*" (Copley Hill), working through from Leeds to London, had 12 coaches or just over 400 tons. The acceleration and ample power of the engine were again notable. Three min. were recovered to Peterborough, without allowing for two extra slowings. Speed down Stoke bank ranged from 71 to 75 m.p.h. A splendid restart included the attainment of 69 m.p.h. on the level at Holme, 7 miles passed in 9¼ min. after which timing and load called for little effort. Every signal was "off" from Doncaster to King's Cross where 60537 came to rest at 4.43, 2 min. before time.



Motive Power! Horses are frequently used, as here at Kyle of Lochalsh, for shunting purposes on dock lines and wharves. Photograph by E. S. B. Elcome, Woking.

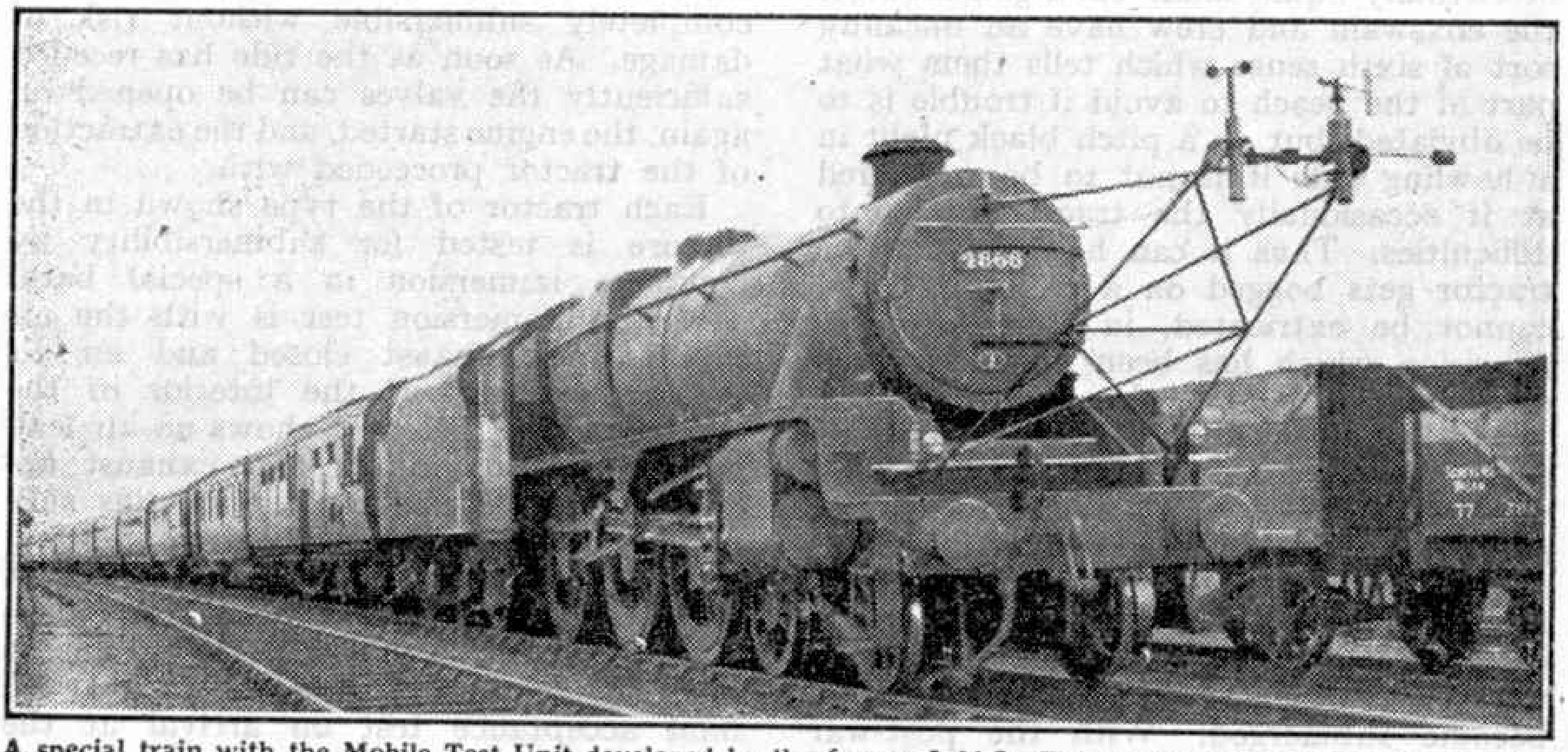
The important multi-tracked junction at Church Fenton, not far from York, Leeds and Harrogate, was recently the scene of large scale engineering operations, when junction points, considerable lengths of main line, signalling and interlocking were renewed and improved.

London Midland Notes

Several of the latest engines built at English Works have gone to Scottish sheds. New class "5" mixed traffic 4-6-0s are numbered and allocated as follows: No. 44705, 28C, Carstairs; No. 44706, 30A, Corkerhill; No. 44707, 27A, Polmadie; No. 44708, 5A, Crewe. Class "4" 2-6-4T Nos. 42166, 27C, Hamilton; and 42167-9, 27A. Nine light 2-6-2T class "2," Nos. 41214-22, are all at 5A. Diesel-electric 0-6-0 shunter No. 12047 works at Toton Sidings, 18A.

Two "Converted Patriot" 4-6-0s added to the "6P" classification are Nos. 45527 "*Southport*" and 45535 "*Sir Herbert Walker, K.C.B.*"

Five "3F" 0-6-0 tanks were recently landed at Dover and conveyed in goods trains to Derby Works. They fell into German hands in France in 1940, with three others not yet located, and had been used, knocked about and slightly altered.



A special train with the Mobile Test Unit developed by the former L.M.S. The special apparatus on the front of the engine measures wind direction and speed. British Railways Official Photograph.

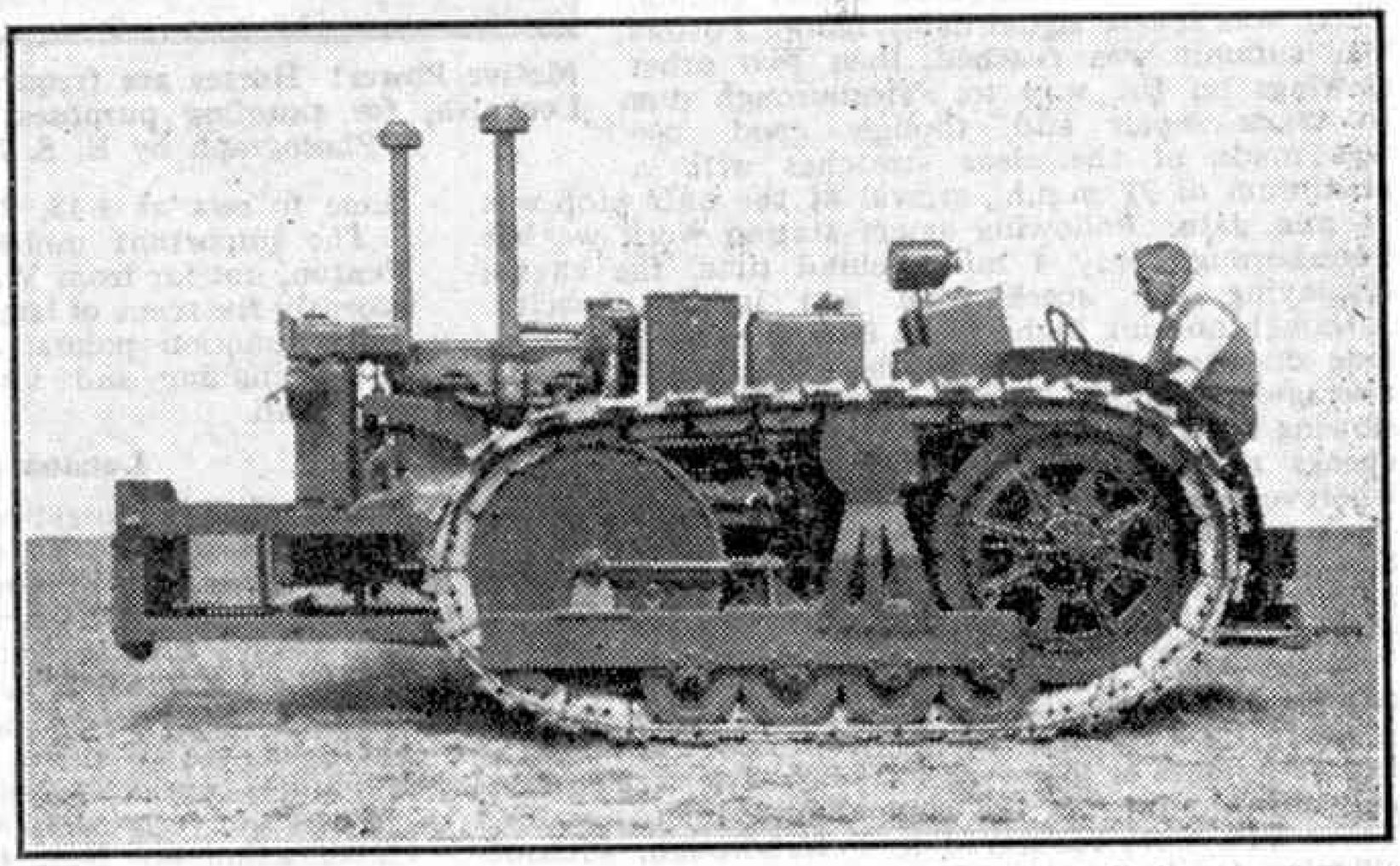
Submersible Tractors for Life-Boats

NOTABLE among the great variety of tractors now available for special purposes is the submersible tractor produced by Roadless Traction Limited for hauling life-boats into and out of the water. These tractors are approved by our own Royal National Life-Boat Institution and also by the Dutch Life-Boat Institution.

The tractor illustrated here is capable of dealing with the most difficult conditions. All round our coasts there are beaches, generally those which are flat and are adjacent to river estuaries, where mud pockets are found which will not only fail to support the weight of the tractor or carriage, but will even fail to support the weight of a man. Not only this, but these mud pockets do not of necessity remain in the same place, and generally speaking are quite invisible to the inexperienced eye. The surface of the beach may appear an unbroken stretch of sand, and yet in some particular spot a thin layer of sand may overlie a patch of virtually liquid mud. As a general rule, the coxswain and crew have an uncanny sort of sixth sense which tells them what part of the beach to avoid if trouble is to be obviated, but on a pitch black night in a howling gale it is not to be wondered at if occasionally the tractor gets into difficulties. Thus it can happen that the tractor gets bogged on a rising tide and cannot be extricated, in spite of every provision which has been made for such contingencies, before being covered.

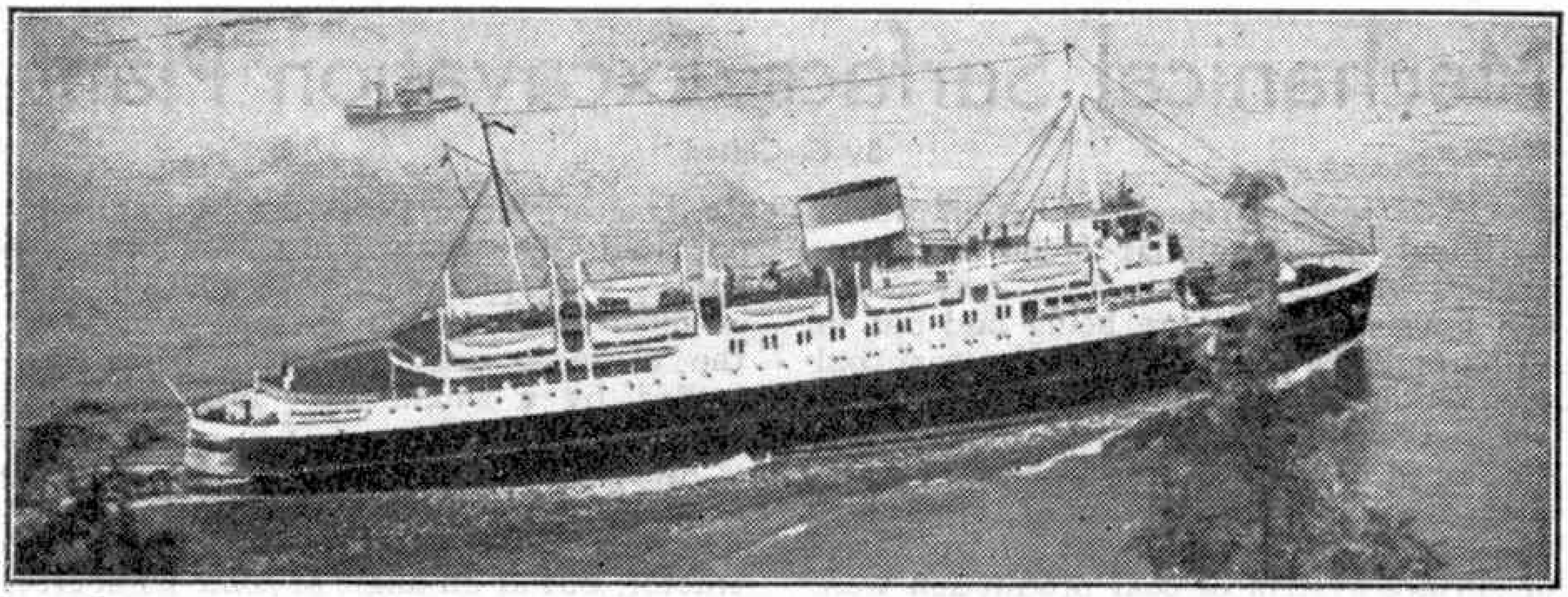
An instance of this having occurred some years ago, a modification was decided upon to make it possible for the tractor to be recovered at the next low tide under its own power. The tractor has always been submersible without any risk of the entry of water into any vital part up to the point when air intake and exhaust become submerged. With the post-war models it is now possible for the tractor to be completely submerged above the air intake and exhaust, and on the receding tide to be driven away under its own power without any water having got into the mechanism.

This is provided for by means of two special valves designed by the engineers of the R.N.L.I., which are of course normally left open. If the tractor gets into difficulties on a rising tide, however, and it becomes obvious that it cannot be extricated before being submerged, then the driver, having shut down the engine, can close the valves mounted on the air intake and exhaust, making the tractor completely submersible without risk of damage. As soon as the tide has receded sufficiently the valves can be opened up again, the engine started, and the extraction of the tractor proceeded with.



Side view of Submersible Life-Boat Roadless tractor. Photograph by courtesy of Roadless Traction Ltd.

Each tractor of the type shown in the picture is tested for submersibility by complete immersion in a special bath. The first immersion test is with the air intake and exhaust closed and an air pressure throughout the interior of the tractor. When this test shows no air leak whatsoever, air intake and exhaust are opened up and the tractor remains submerged in the bath for a whole day, being run and stopped alternately at hourly intervals. If subsequent examination shows no signs of leakage this is regarded as satisfactory subject to the final acceptance test on arrival at the coast.



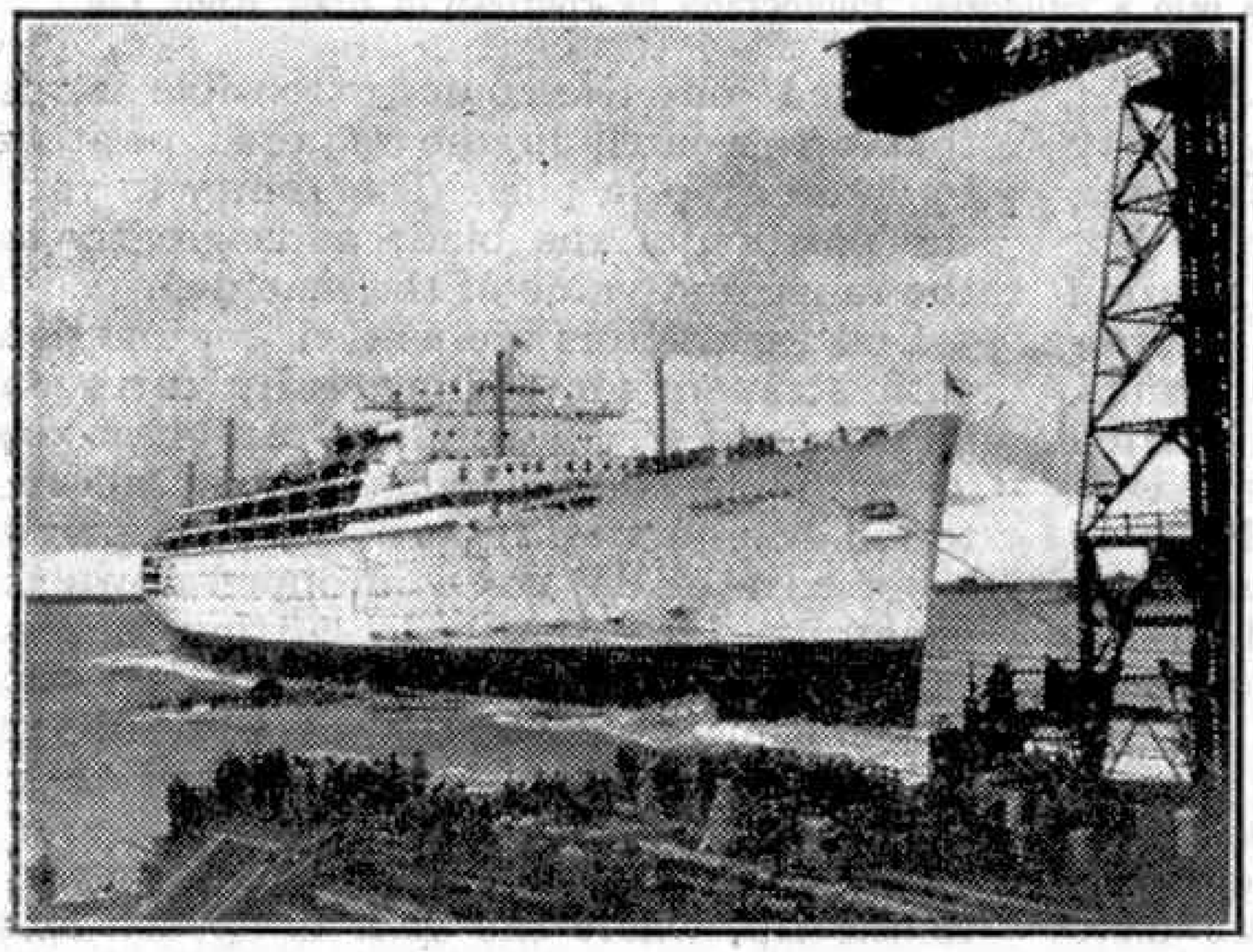
The Canadian National Steamships liner "Prince George" at Vancouver. This 5,700-ton vessel is the largest passenger ship yet built on Canada's West Coast and is now in service between Vancouver, Prince Rupert and ports of Alaska. Photograph by courtesy of Canadian National Steamships.

Shipping Notes

New P. and O. Liner

The largest vessel in the world launched this year was the Peninsular and Orient liner "*Himalaya*." This splendid 31,000-ton vessel was built by Vickers-Armstrongs Ltd. at their Barrow-in-Furness shipyards and was launched in October. She is now being fitted out and when completed she will be a handsome ship with a raked stem, a cruiser stern, one streamlined funnel and a single pole mast.

The "*Himalaya*" is intended for the express P. and O. service between England, Bombay and Australia, and will carry 770 first-class passengers and 390 in the tourist class. Her geared turbine engines will give her a speed of 22¼ knots, and when she begins service she will reduce the time for the passage between England and Bombay from 20 to 15 days, and that between England and Melbourne from 38 to 28 days.



Launch of the P. and O. liner "Himalaya" at the Barrow-in-Furness yard of Vickers-Armstrongs Ltd.

Diesel-Electric Ferry Boat for Merseyside

Readers who are familiar with the ferries of Merseyside will be interested to learn that the Wallasey Borough Council have ordered a new vessel that will introduce diesel-electric propulsion to this service. The new vessel is to be constructed by William Denny Bros. at an estimated cost of £256,000, and delivery is expected in 1951. She will have a length of 160 ft. and a breadth of 8 ft. 6 in. There will be four decks, consisting of lower, main, shelter and sun decks, and the vessel will be capable of carrying 2,500 passengers on the normal ferry service and 1,000 when she is employed on river cruises.

The machinery of this interesting new vessel will consist of four six-cylinder diesel engines, coupled to 300 kW main generators and 50 kW auxiliary generators. The main generators will deliver direct current to the two propelling motors, each of which will be capable of an output of 540 h.p. at 195 r.p.m. when three of the diesel engines are in commission, or of 730 h.p. at 215 r.p.m. with four engines in use. For normal ferry service three generating sets only will be in operation, the fourth being held in reserve.

A New Canadian Luxury Vessel

The vessel shown in the upper illustration on this page is the twin-screw "*Prince George*" of the Canadian National Steamships Pacific fleet. This vessel was built by Yarrows Ltd. at Esquimalt, near Victoria on Vancouver Island. She was launched in October 1947 and went into service last June, plying between Vancouver, Prince Rupert and Alaska.

The "Prince George" is the largest vessel ever constructed on the west coast of Canada. She has an overall length of 350 ft. and a tonnage of 5,700, and her 7,000 i.h.p. turbine engine gives her a speed of 18 knots. She is primarily intended for passenger service on her route, and special arrangements have been made for luxurious tourist accommodation for 322 passengers. Provision is made for the carriage of motor cars.

New Orient Liner Completed

The "*Orcades*," a 31,000 ton vessel constructed at Barrow for the Orient Line, is expected to begin her maiden voyage on 14th December. She was launched on 14th October 1947. A sister ship, the "*Oronsay*," was laid down on the same slipway immediately after the launch of the "*Orcades*."

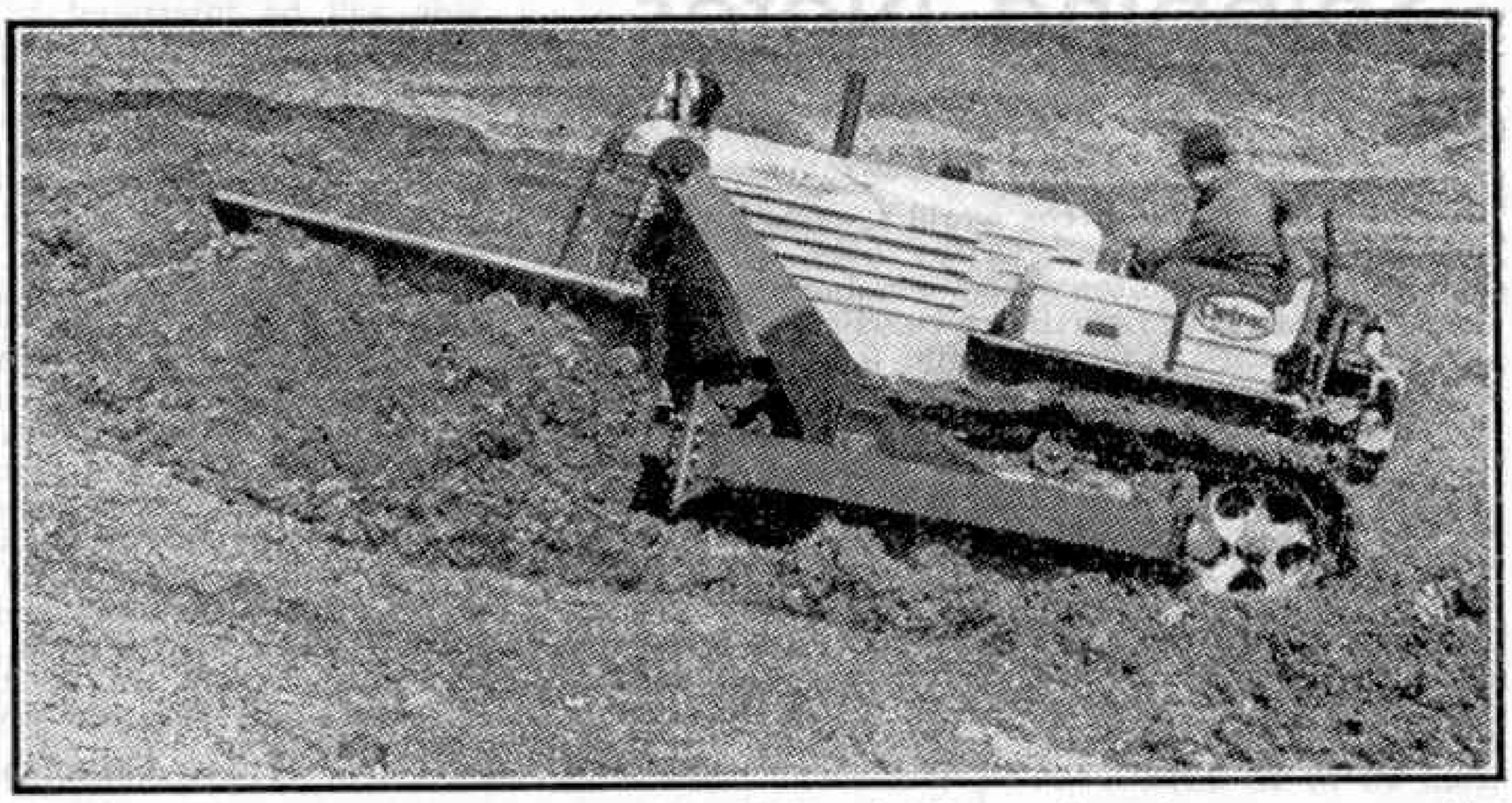
Mechanical Surface Excavation Plant

By G. Clifton

LARGE scale surface excavation works must be a familiar sight to many readers in these days, when new roads and housing estates are being laid out in all parts of the country, and open-cast coal production is being developed.

Excavation by mechanical plant developed greatly during the war years, when the rapid construction of aerodromes and the swift development of open-cast or surface system of coal production were matters of the greatest urgency. The engineers of the United States were the pioneers of "mechanical earth-moving," as they term it, and we have learnt much from them.

Most of the work on open sites is done by massive tractors on crawler tracks. These are invariably diesel-engined, the largest "D.8" type having a motor of 120 h.p. They are not unlike tanks, being heavily built throughout and controlled by steering clutches, that is one track is slowed down or stopped in order to alter the direction of travel.

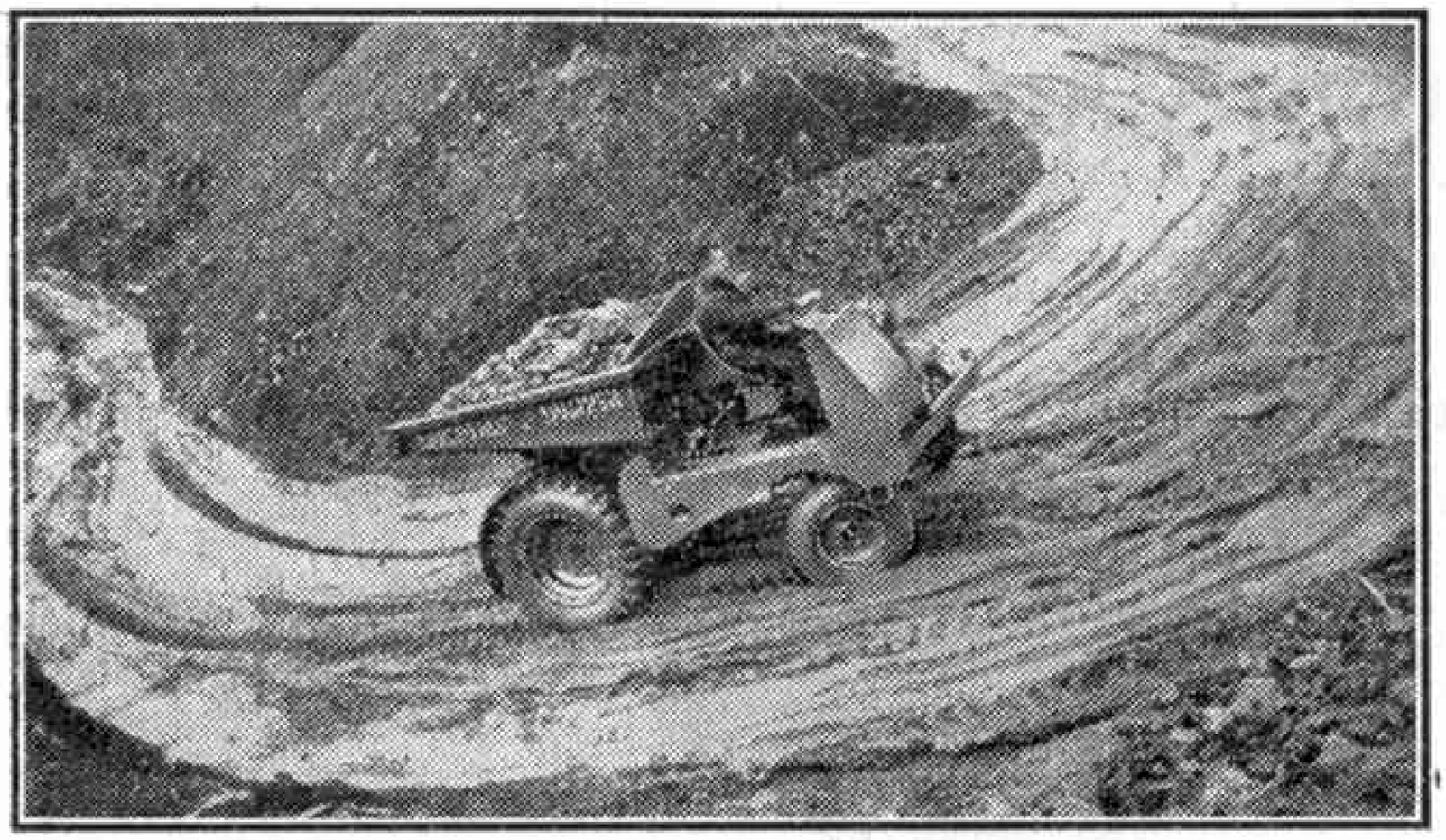


A Blaw Knox Angledozer at work. The blade of this can be set square, converting the machine into a bulldozer. Photograph by courtesy of Blaw Knox Ltd.

These tractors are fitted with a variety of attachments, or tow various machines, in order to excavate or fill in earth. For uprooting small trees and bushes, clearing undergrowth, levelling out minor depressions in soft ground, trimming coal banks, or similar jobs, a bulldozer blade is fitted to the front of the tractor. This is a broad, concave hardened steel blade, as much as 12 ft. wide and 3 ft. 6 in. deep, which is used to push soil ahead of the machine. The blade is mounted on steel arms extending from the side of the tractor, and the whole assembly is pivoted so that the blade can be raised and lowered as required through a height of four to five feet. Small machines have cable-operated blades, worked by a system of pulleys from a winch at the rear of the tractor; larger types are hydraulically operated. The Blaw Knox Bulldozer is a typical example of this. A pair of large oil-filled hydraulic jacks raise and lower the blade as required, both being controlled by a single lever operated from the driver's seat.

A variation of the bulldozer is the angledozer, in which the blade is not mounted squarely across the front of the tractor, but at an angle of some 20 degrees so that the earth is "spilled" to one side as the tractor moves forward. The Blaw Knox machine is readily adaptable from a bulldozer to an angledozer, with a right or left angle of delivery, the blade being mounted on telescopic extensible arms that are secured in the required position by loose drop-in pins. The ability to vary the position of the blade adds greatly to the range and value of the machine.

Crawler tractors are used in conjunction with scrapers for cutting away earth on major works. A scraper can best be described as a steel box on four wheels, towed behind the tractor. The sharpened lower edge of the box is dropped down to penetrate into the soil, cutting out a slice from 2–3 in. to 1 ft. or more in depth, which piles up in the box. When full, the box of the scraper is lifted clear, the front end is closed with a drop door, and the whole machine trundles away to the tip, where the door is opened and the excavated material is mechanically ejected as the scraper travels along.



A Muir-Hill Dumper in a quarry. The seat and steering column can be rotated so that the driver looks ahead in both forward and reverse directions.

spreading the soil evenly behind it.

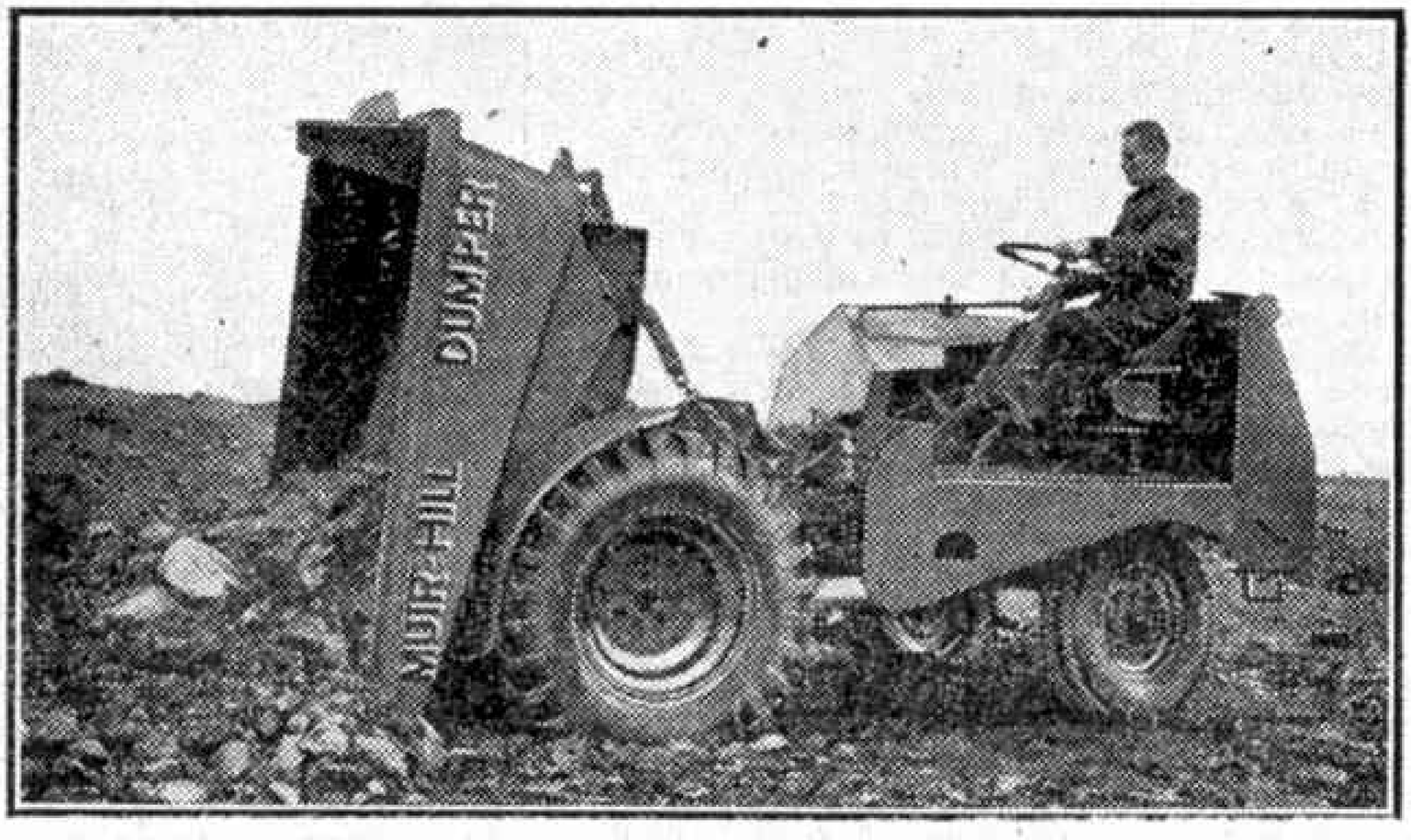
The mechanism of the scraper is cable-operated from the winch at the rear of the tractor, the whole combination again being controlled by one man from the driving seat. The largest pattern scraper can take up 13 cu. yds. or more at each run. Needless to say, the biggest 120 h.p. "D.8" tractor is required to provide the necessary power for this, but even a 40 h.p. "D.4" model can take a 7 cu. yd. scraper. A skilled operator can work to amazingly fine limits with this combination, excavating to level pegs set out by a surveyor with as much accuracy as if the work was done by gangs of men with shovels—but with a remarkable difference in the speed of work and the output per man.

A rooter is another machine towed by crawler tractors; its function is obvious from the name. But enough has been said about the actual excavation, and let us now consider how the spoil or overburden is carried away.

A mechanical shovel or navvy is often employed to dig out the soil from a central dump or spoil heap, where it had been deposited by the scrapers and other excavators, and load it into lorries for transport away from the site. Tipping lorries are employed, so that the load can be easily shot out at the end of the haul, and the Bedford End Tipper (Dinky Toys No. 25m) is a good example of this type of vehicle.

These lorries have a normal capacity of some four tons and are of very robust construction, in order to withstand the strains imposed by travelling fully-laden over rough ground on civil engineering and building sites. By strengthening the chassis, and providing additional heavy-duty inverted leaf springs known as helper springs, below the main semi-elliptic springs of the rear axle, the capacity may be increased to 5 tons. The vehicles have a short wheelbase, with a forward-control cab mounted partly over the 28 h.p. 6-cylinder engine, which increases their manœuvrability on restricted sites. The overhead valve engine has a capacity of 3,500 cc., yielding 72 b.h.p. at 3,000 r.p.m. The tipping gear, like the braking system, is hydraulically operated, a telescopic ram worked from the engine lifting the steel framed body through an angle of 45 degrees when required.

If the excavated material is to be moved a relatively short distance, or has to be carted over exceptionally broken ground or steep gradients, a dumper may be employed. These versatile little vehicles are seen in use on every sort of construction work, carrying all types of loads over the most difficult ground; (*Continued on page 454*)



A Muir-Hill "Hiway" Dumper deposits its load. The illustrations on this page are reproduced by courtesy of E. Boydell and Co. Ltd.

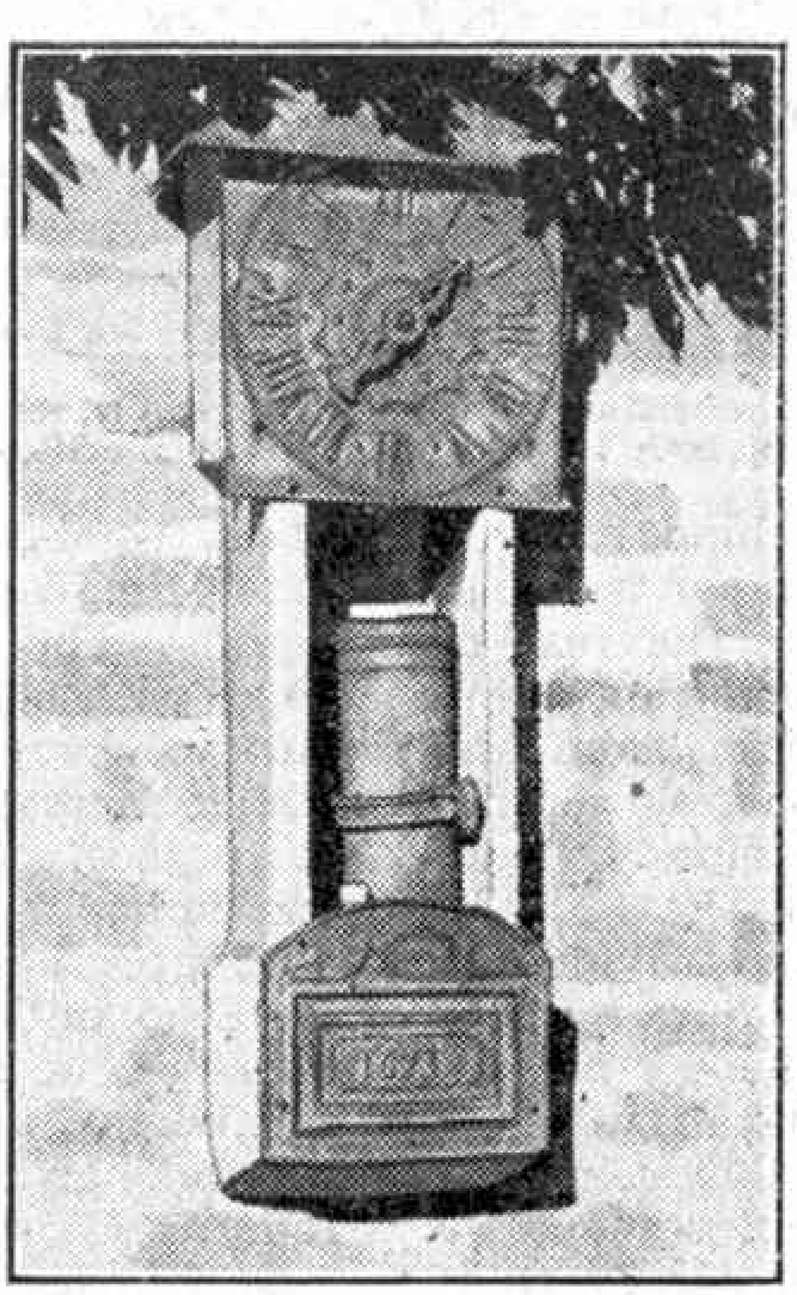
From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

WATER DRIPS MEASURE TIME

The water clock shown in the accompanying illustration was made in 1673 and now hangs on the wall of Dipley Mill near Basingstoke, Hants. It has one hand, which is operated by a cord running over its spindle and attached to a float in a cylinder of water beneath the clock. The water is allowed to drip away through a regulating tap, and as the level sinks the hand is turned. By means of twelve divisions between each hour the time can be calculated to the nearest five minutes.

E. S. B. Elcome (Woking).



A water clock nearly 300 years old. Photograph by E. S. B. Elcome, Woking.

A KING'S CAVE

We have all heard the story of how Robert Bruce was taught a lesson in perseverance by a humble spider, and last summer I visited the cave where this is supposed to have happened. It is in a desolate spot on the west coast of the Isle of Arran. It has also been called Fingal's Cave, though it should not be confused with the more famous one on the island of Staffa.

Legend has it that Fin-mac-cuil, or Fingal, was born and lived there. He was the giant who is said to have formed a set of stepping stones by which he strode over to Kintyre, and thence to the Irish coast by way of the Giant's Causeway.

Just inside the entrance is a seat cut out of solid rock, and here Bruce sat and pondered. On the walls are ancient drawings, one being that of a claymore or two-handed sword, another that of a man with uplifted hands. The cave, which narrows like a Gothic arch overhead, branches into two sections towards the end of its length of 12 ft. In the walls of these two recesses, on each side, are several small holes in pairs opposite each other. These supported the ends of transverse beams that held the pots in which venison was cooked by early settlers, or possibly by pirates and smugglers of a later age.

On Machrie Moor near at hand is a double circle of granite blocks, more or less round-topped and each about 4 ft. high. This is known as Fingal's Cauldron, one stone representing his seat, the remainder his circular cooking pot. The entire region abounds in legends. The story of Bruce's visit to the cave has no foundation in fact, though he had important associations with Arran, crossing from Rathlin on one occasion with his fleet of 33 small galleys and 300 men to a point on the east coast of the island. Other caves on the island are known as the King's kitchen and the King's cellar, and there is also a King's hill.

A. H. V. Greenland (Barnsley).

FROM TUG TO EXCURSION STEAMER

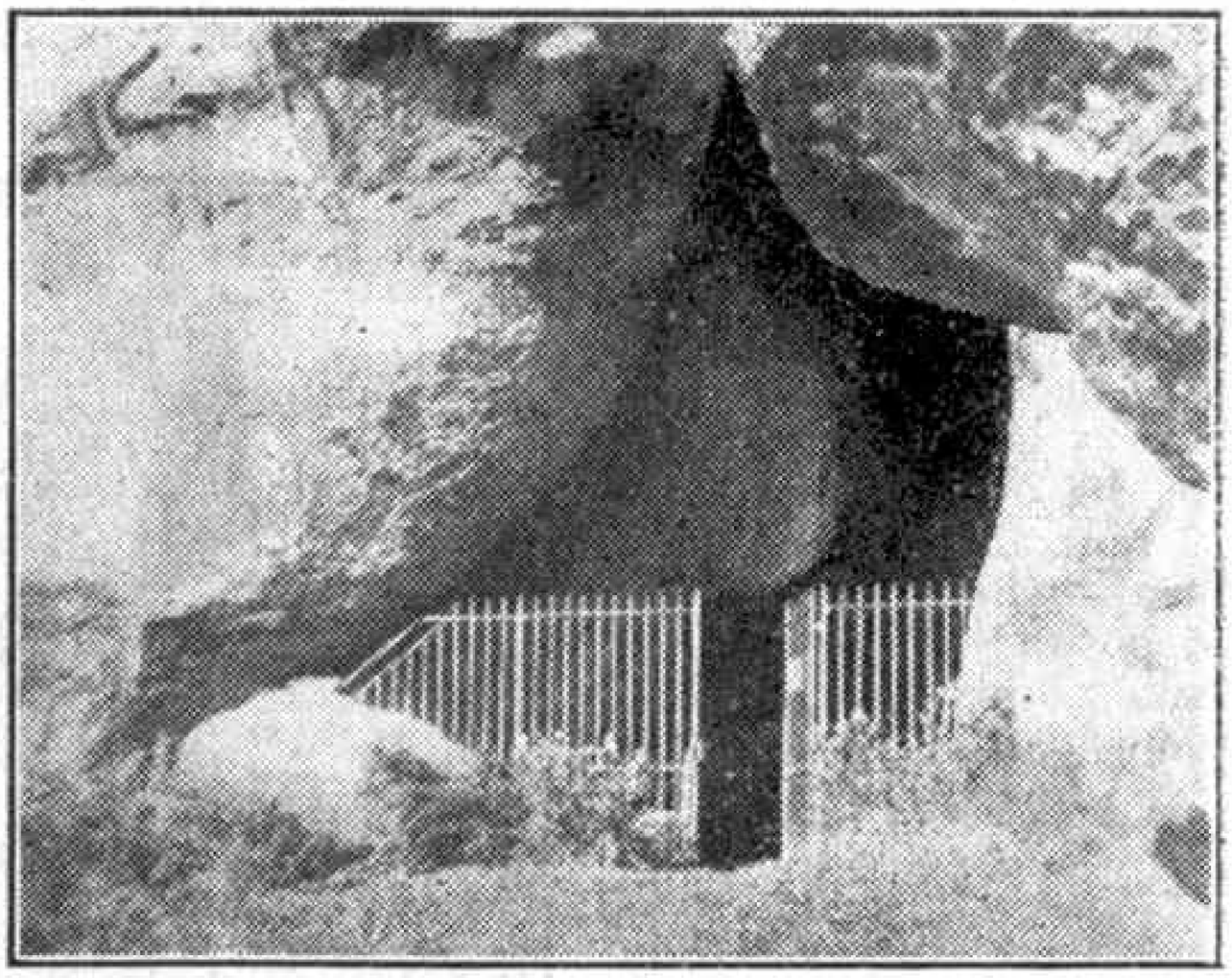
There appeared on the Clyde last summer a much smaller boat than the usual excursion steamer. She was the "*Wimaisia*," and ran from Ardrossan to Lochranza and Campbeltown. I decided to have a sail on the vessel and found that she was a tug. Great was my surprise to find "*Duchess of Abercorn*" on the bell.

A detailed description and a photograph of this fine little vessel appeared in the "*M.M.*" for June 1947. Since then there have been one or two alterations. A large wireless direction finder now protrudes from the top of the neat yellow funnel, and a small second mast has been added to support the ordinary aerial. The Marconi wireless installation is of the latest kind, and was put aboard the "*Wimaisia*" only this year. The wireless operator told me that some of the components had been on display at the radio exhibition in London.

The sail from Ardrossan to Campbeltown was exceedingly pleasant. The two large windows of the dining saloon enabled passengers to watch the scenery while dining, a thing that is very difficult on the railway steamers.

The "*Wimaisia*" did not prove economic as an excursion steamer and her owners decided to sell her.

Ronald Maceachen (Glasgow S.1.)



The entrance to King's Cave, Arran, in which Robert Bruce is said to have watched the spider. Photograph by A. H. V. Greenland, Barnsley.

Club and Branch News

WITH THE SECRETARY

CHRISTMAS THOUGHTS

Now I have the pleasure of wishing a Merry Christmas to all members of the Guild and the H.R.C., and of Meccano Clubs and H.R.C. Branches. I shall think of all of them during the Christmas season, when they are enjoying themselves at parties, and I shall also keep in mind those organizations that have arranged Exhibitions and Open Nights. I always like to hear of these. A pleasure is all the greater for being shared, and members of Clubs and Branches are always happier when they invite others to join in their fun.

It is delightful to entertain parents and friends in some way at these times, and I am all for it. But there is an even better way of spreading the pleasures of Club and Branch life. This is by bringing in boys who have not previously been able to take part in them and persuading them to join. In other words, officials and members alike should make a special effort to tell other Meccano and Hornby Train enthusiasts what good times they have and to persuade them to help in the good work themselves. "The more the merrier" is a splendid motto that can be applied with complete truth to Clubs and Branches.

There is another reason why special efforts should be made to gain recruits at this season of the year. Many boys make their first acquaintance with Meccano and Hornby Trains at Christmas. They come to these hobbies with the greatest eagerness, and they will make the best progress, and will enjoy themselves all the more, when they join other enthusiasts, particularly those who already have experience of Club and Branch life. It is these boys for whom a careful watch should be kept.

There are many methods of attracting attention to Club and Branch work. One is the appearance of news of these organizations in the *"M.M."* Many Clubs arrange for notices of their meetings to be included in the local press, and others are in touch with dealers, who very kindly help them, sometimes by the display of notices of Club meetings.

All these methods are good, but by far the best recruiting medium is the individual member himself. Every boy who shares in the joys of Club and Branch life should look round among his friends to find those who are not taking part in these activities, and he should undertake to bring at least one of them to Club meetings and do his utmost to enrol his recruit as a permanent member.

CLUB NOTES

MORDEN M.C.—Membership continues to increase. An important event was the first Annual Exhibition held last month, for which special Meccano models were built, while Hornby Trains, Dinky Toys, Stamps etc., also were on show. Locomotive "Spotting" is popular with members, and several groups, each under a leader, have been formed for this purpose. Spotting excursions have been combined with picnics. *Leader:* Mr. H. B. Moyer, 9, Cherry Wood Lane, Morden, Surrey.

1ST MARTOCK SCOUTS M.C.—Members have been busy constructing both large scale models, in the building of which all take a part, and individual models. The selection of models for display at the Club's Exhibition aroused a fiery discussion. Club roll: 8. *Secretary:* D. A. Bayliss, Lloyds Bank House, Martock, Somerset.

CUDDINGTON CROFT M.C.—Activity has increased in a satisfactory manner during the last few months. Special attention is now given to the construction of models suitable for entry in *"M.M."* Contests. Club roll: 11. *Secretary:* R. V. J. Chadder, St. David, 16, Sandy Lane, Cheam, Surrey.

BRANCH NEWS

LOUGHTON—Interest in Branch activities has been revived. Officials have been selected at an Annual General Meeting and work has begun on the reconstruction of the track. A Chief Engineer and Rolling Stock Superintendent have been appointed. There is room for more members, and Hornby and Hornby-Dublo Train enthusiasts in the neighbourhood are invited to join. *Secretary:* F. King, 12, Shelley Grove, Loughton.

A group of officials of the Rydal School (Colwyn Bay) Branch, No. 504. From left to right these are H. S. Roberts, Treasurer; K. L. Holgate, Secretary; Rev. H. F. Mathews, President; Mr. M. P. Thomas, Chairman; and R. H. Wolstenholme, Committee member. This Branch was incorporated in July 1947. It has an extensive electric layout on trestles in a large and well-equipped Branch room, and the displays it has given on various School occasions have aroused the greatest enthusiasm for its activities.

SLOUGH—Meetings continue, although the Branch is in need of a new Chairman. A garden railway has been operated. Branch funds are steadily increasing and will be put to good use in the purchase of new equipment. *Secretary:* W. Eisele, 335, Farnham Road, Slough, Bucks.

NEW ROAD MODEL RAILWAY (BUCKHURST HILL)—Members have been busy with the Gauge 0 layout, now in course of electrification. The Hornby-Dublo Railway also is undergoing reconstruction on a plywood base. Background scenery is being constructed. Members work well together and thoroughly enjoy all meetings. *Chairman:* Mr. G. C. Flowers, 21, Boxted Close, Buckhurst Hill, Essex.

Among the Model-Builders

By "Spanner"

Another competition prize-winner. He is C. F. Penn, of Redland, Bristol.

Driving Unit for Bogie Vehicles

The device illustrated in Figs. 1 and 2 shows a simple method of transmitting a drive from an electric or clockwork motor placed in the centre of the chassis to both bogies of an electric train or tramcar. Fig. 1 shows a general view of the chassis of the vehicle, and Fig. 2 a close-up view of one of the bogies of the vehicle.

Two 12½" Angle Girders bolted to 3½" × 2½" Flanged Plates are used to form the chassis of the vehicle. Each bogie consists of two 3½" Flat Girders joined by two 2½" × ½" Double Angle Strips, and a third Double Angle Strip 1 is bolted between the Flat Girders.

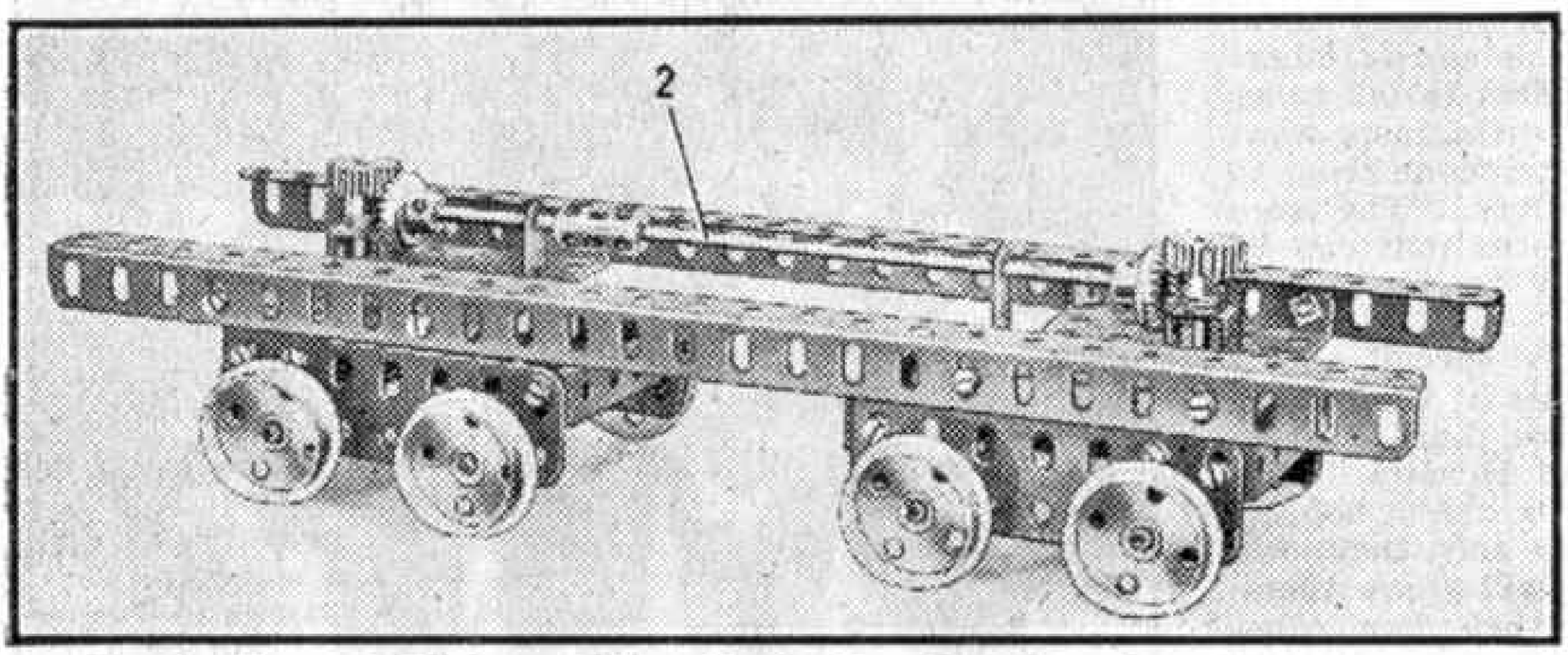


Fig. 1. A novel driving unit for the bogies of an electric train or tramcar.

The drive from the motor unit is taken to a shaft 2, horizontally mounted in 1" × 1" Angle Brackets bolted to the Flanged Plates. Fixed on each end of this shaft is a ¾" Contrate, and these mesh with ¾" Pinions mounted on short vertical Rods. These Rods are borne in Double Bent Strips fixed to the Flanged Plates, and carry at their lower ends ½" Pinions, one of which is indicated at 3. The short Rods pass through the centre holes of the Double Angle Strips 1, and the ½" Pinions engage the teeth of ¾" Contrates fixed to the driving axles.

Electric Lifting Tackle for Model Cranes

The ordinary type of crane lifting tackle, such as a hook or a giant grab, cannot be used efficiently for handling some kinds of loads, and in these instances special tackle has to be fitted. A good example of this is to be found where cranes are used for lifting and transporting sheet metal and castings in stockyards and foundries. These cranes are usually equipped with powerful electro-magnets, some of which will lift very heavy loads indeed.

A suitable electro-magnet for a model crane is easy to assemble, and if one of these is fitted instead of a hook it will add considerably to the fun obtained from operating the model. A suitable bobbin for the magnet can be made by gluing cardboard discs about ¾" diam. to the ends of a stout paper tube 1¼" long. Two such bobbins are then wound to capacity with No. 26 S.W.G. wire. The bobbins are then

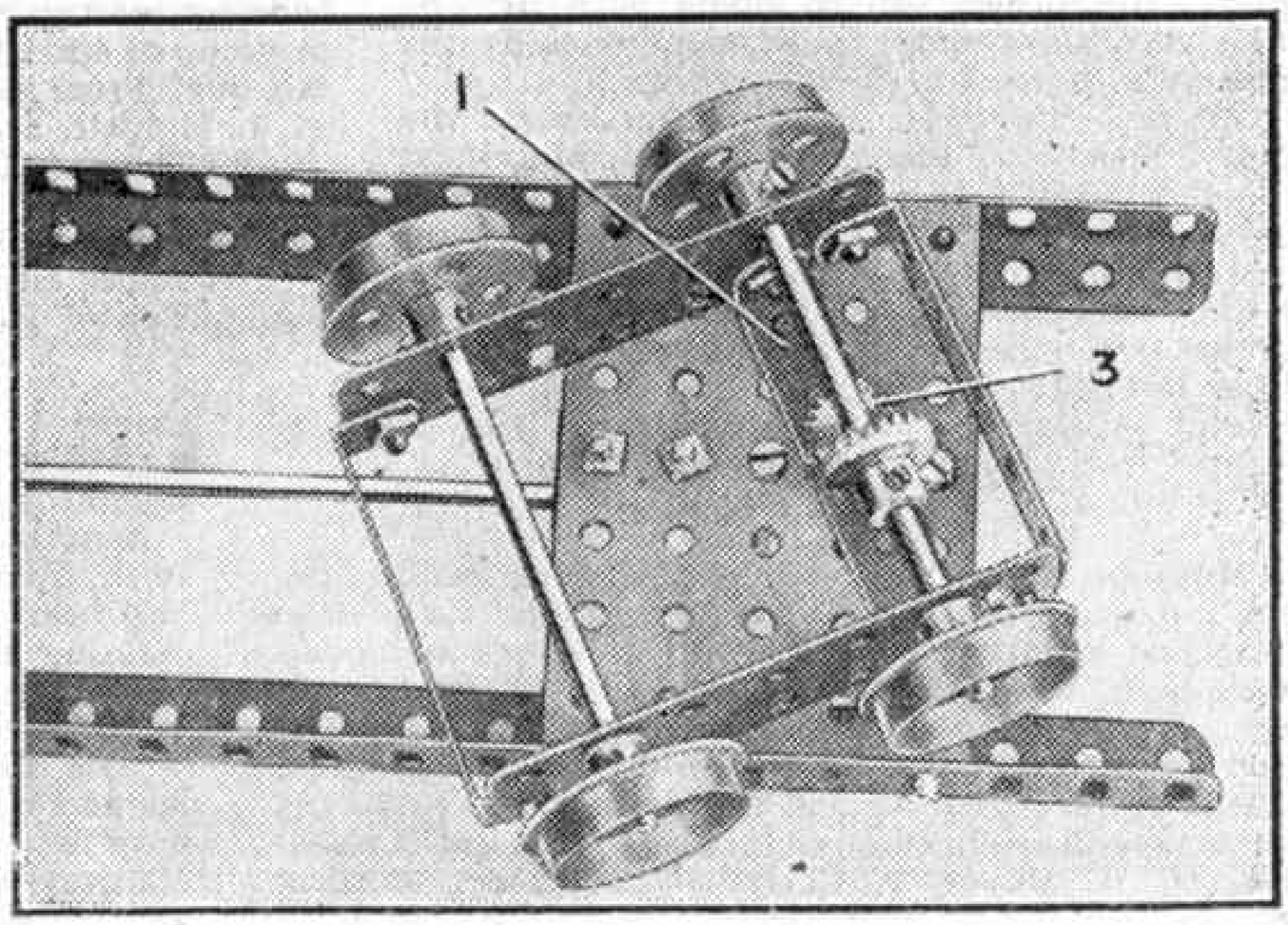
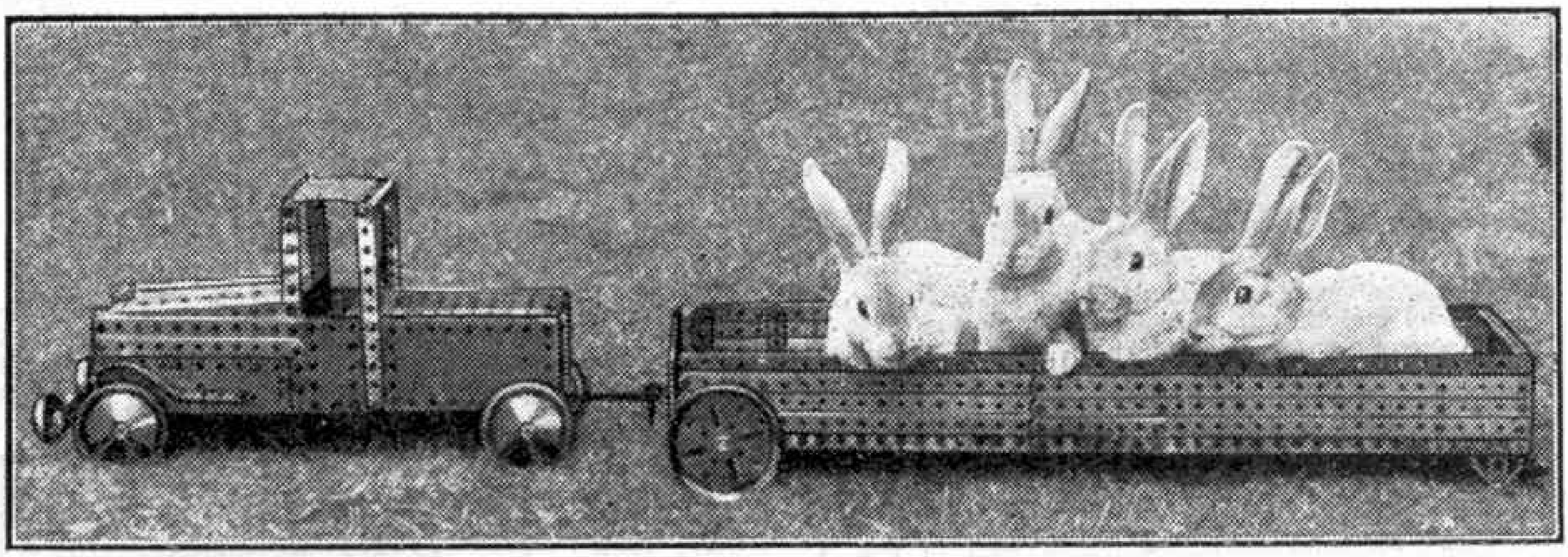


Fig. 2. An underneath view of one bogie in the bogie driving unit illustrated complete above.



All aboard! Pet rabbits enjoying a ride in a Meccano motor lorry built by Roger Weeks, Carlisle.

attached by means of short Screwed Rods to a yoke consisting of three 1½″ Strips placed face to face. To the centre hole of these Strips is bolted a Stepped Bent Strip, and in its arm this carries a short Rod bearing a 1″ loose Pulley. The inner leads of the bobbin coils are twisted together, and the outer leads are connected to terminals of a transformer or a battery. The crane hoisting cord passes around the 1″ Pulley.

A switch should be inserted in the electro-magnet circuit so that the current supply can be switched on or off at will, and in a large model crane the switch should be fitted in the operating cabin.

How to use Meccano Parts

Face Plate (*Part No. 109*)
Wheel Flange (*Part No. 137*)

The Face Plate and Wheel Flange used in conjunction are very suitable for building up large flanged wheels, such as those required for the bogies of a large model locomotive. The Wheel Flange in addition has many widely different applications. Fig. 3 shows it used as part of a centrifugal governor. In this mechanism the governor weights 5, which are attached to short arms 3 carried on a Bush Wheel 1, fly outward when the latter rotates and press against the inside of the Wheel Flange, so preventing the Bush Wheel exceeding a certain speed limit. The Wheel Flanges are also useful for forming brake drums for internal expanding brakes. The Face Plate also fulfils other functions. An obvious use is in a lathe where it serves as a face plate and thus justifies its name. Two Face Plates placed back-to-back make a fine sturdy hub for a large built-up flywheel.

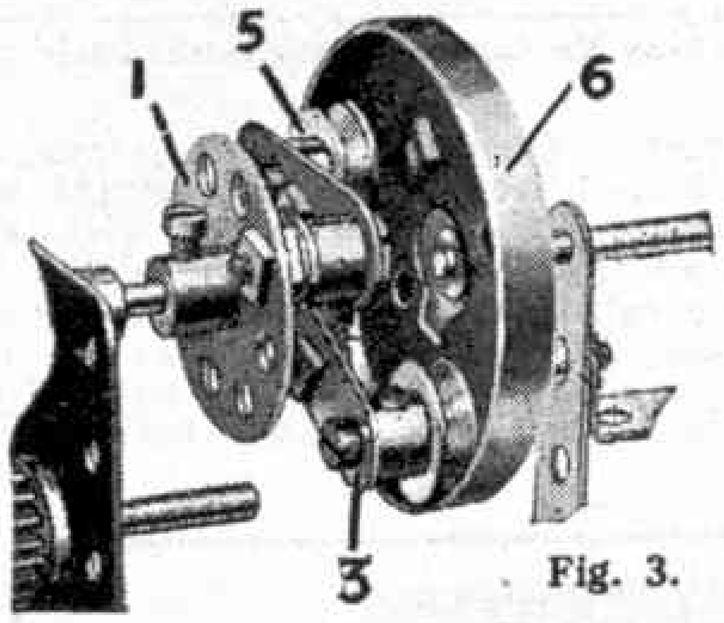


Fig. 3.

Hub Disc (*Part No. 118*)

The Hub Disc is another very useful part especially in large models. When bolted to a large Circular Plate it forms a a splendid large flanged wheel, such as those used for the driving wheels of a locomotive, and it also makes an excellent flywheel or a travelling wheel for a model traction engine. In Fig. 4 a Hub Disc forms the end plate of a boiler, while another serves as an internal supporting rib.

The appearance of the Hub Disc forming the front plate of the boiler, may be made more solid and realistic if it is filled in. This is carried out by bolting a 2½″ Triangular Plate over each of the gaps in the Hub Disc. A single bolt is used for securing each Triangular Plate in place and this passes through one of the three slotted holes in the part. Two Hub Discs can be used with ¾″ Flanged Wheels as a built-up roller bearing.

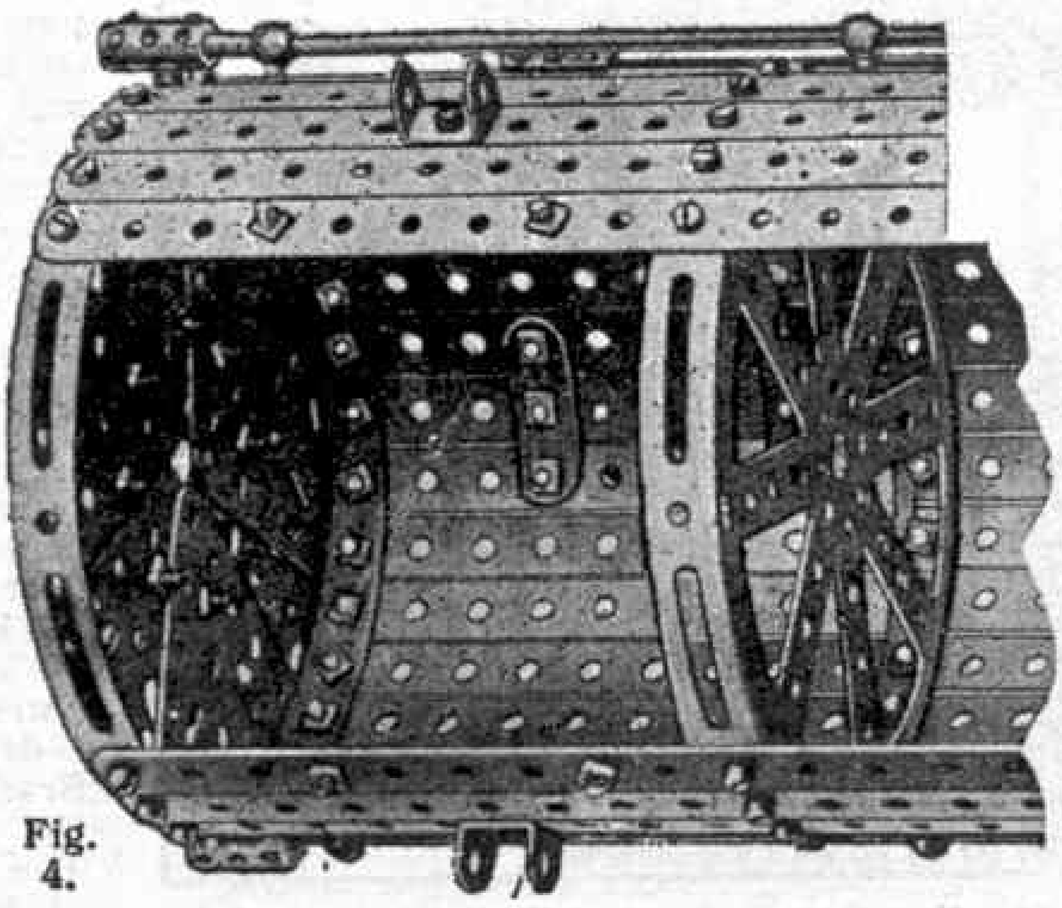


Fig. 4.

Figs. 3 and 4 above show typical uses for the Meccano Wheel Flange and Hub Disc respectively.

Fun for the Christmas Party

By "Spanner"

Novelties Made From Meccano

THE Christmas season offers a fine opportunity for model-builders to display their ingenuity in devising from Meccano amusing games to entertain their party guests, and this month therefore we describe one or two items that show the possibilities in this direction, and which should prove a big attraction over the holidays. The first of these is a modified form of the old fairground "Aunt Sally" game.

In the Meccano model, which is seen in Fig. 1, three amusing figures are pivoted on a horizontal bar so that they can be knocked over by a missile such as a Washer, skilfully fired from a Meccano gun. When one of the figures is hit its head and shoulders disappear from view, and its legs appear on the underside of the stall!

The framework of the base is made by joining four 12½" Angle Girders together in pairs to form two compound 24" girders. These are then connected at each end by a 9½" Angle Girder, and at the centre by two 9½" Strips. The space between the girders is filled in with eight 12½" Strip Plates. One end of the base is raised by two 2½" Angle Girders bolted to 1" Corner Brackets fixed to the sides. The 2½" Angle Girders are braced by 12½" Strips as shown.

The upright Girders of the stall are 7½" Angle Girders (see Fig. 2) and they are connected at the top by 3½" Strips and 9½" Angle Girders. The sides are filled in by 5½" × 2½" and 2½" × 2½" Flexible Plates.

The supports for the figures are made by bolting a 1½" × ½" Double Angle Strip to a 2½" × 1½" Flexible Plate. A 1½" Strip 1 is attached to each of the lugs of the Double Angle Strip. One of the 1½" Strips is held by a ½" Bolt 2. The supports are pivoted on a compound rod mounted in the sides of the stall. This rod consists of a 6½" and a 4" Rod joined by a Coupling, and it is passed through the end holes of the 1½" Strips of the supports. The rod carries also three Cranks, arranged so that they engage the Bolts 2. A handle 3 is fixed at one end of the rod, and by turning this the supports and their figures can be raised to the required position for hitting.

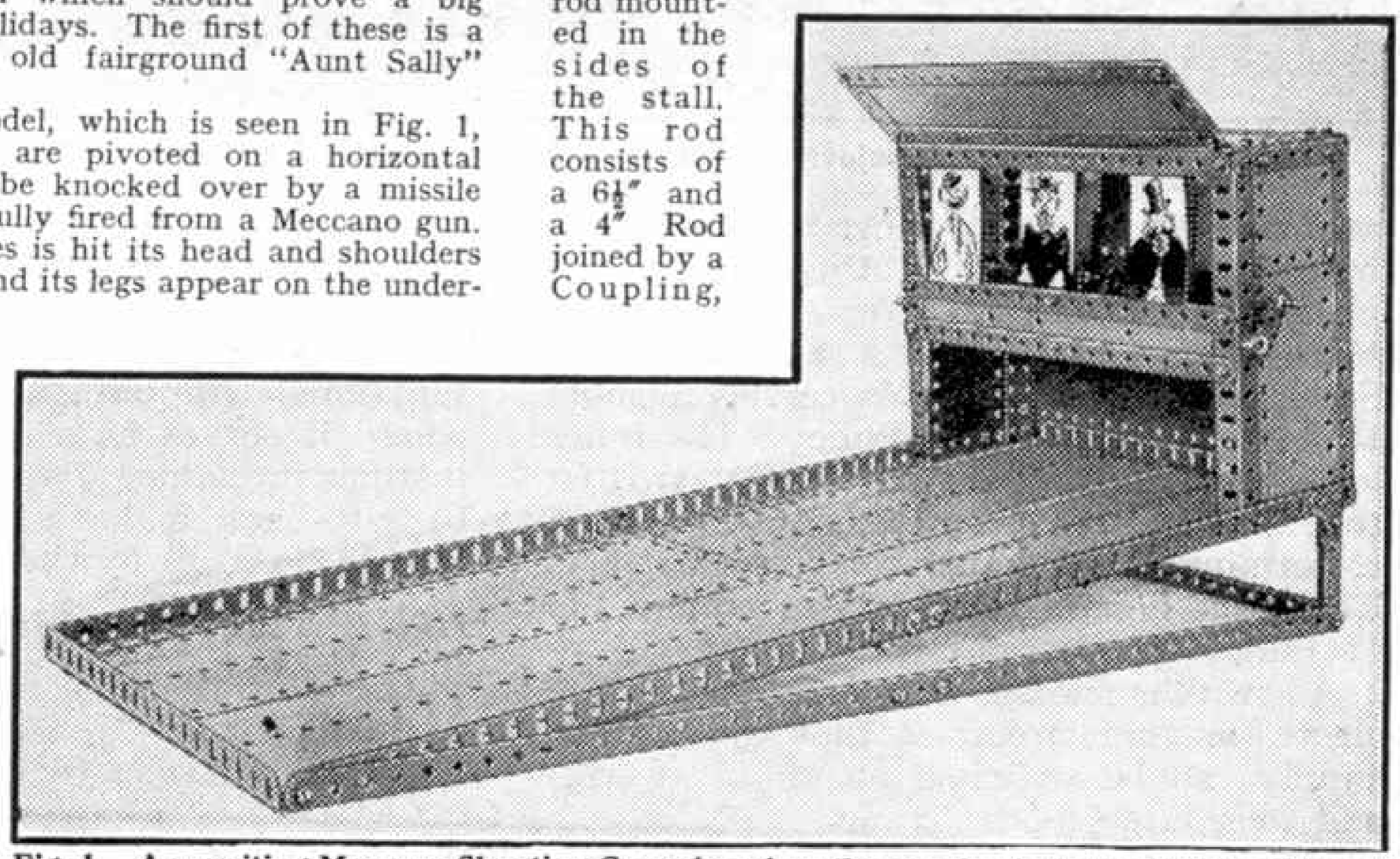


Fig. 1. An exciting Meccano Shooting Game based on the popular fairground "Aunt Sally."

The back of the stall is completed by bolting 9½" Strip Plates across the vertical Girders. The roof is also a 9½" Strip Plate, and a similar Plate is attached by Obtuse Angle Brackets to form an awning.

The construction of the gun is seen clearly in Fig. 3. The "barrel" consists of two 5½" Angle Girders, and a Coupling 4 is fixed to the Girders by ½" Bolts. Washers are used to space the Coupling from the Girders. A 5" Rod is fixed in the Coupling, and a Collar 5 is free to slide on the Rod. A Spring is passed over a ⅜" Bolt screwed into each of the tapped holes of the Collar, and the Bolts are fixed in position by nuts. The opposite ends of the Springs are held by ⅜" Bolts fixed by nuts to 1" Corner Brackets bolted to the barrel.

The handle is formed by two 2½" Strips on each side of the barrel connected at their lower ends by a 1½" Strip. Three Double Brackets are used to space the sides of the handle apart. The release mechanism consists of a 3" Rod 6 mounted in the barrel and in the centre Double Bracket of the handle. This Rod

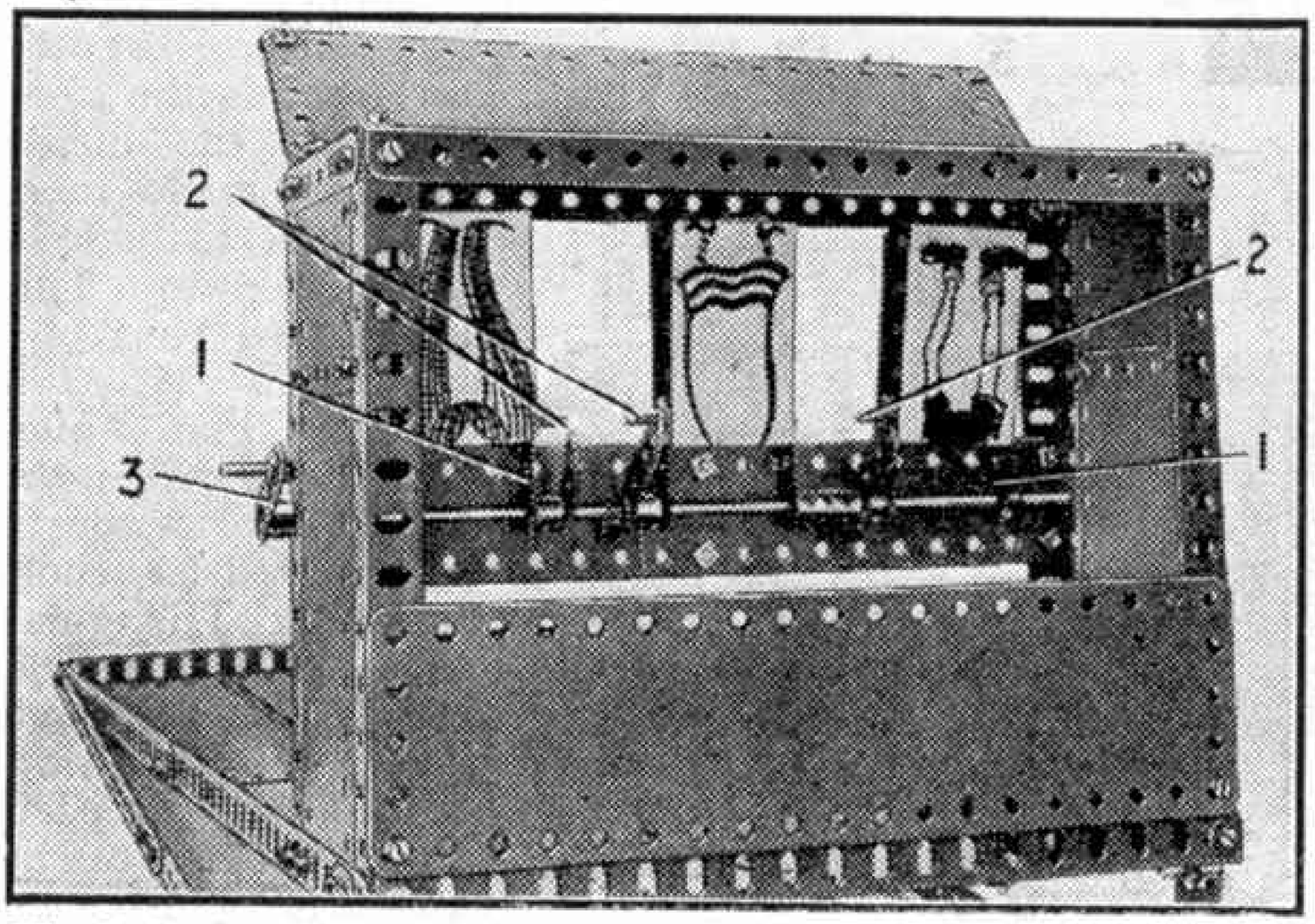


Fig. 2. A rear view of the Shooting Game, showing the arrangement for restoring the figures into position after they have been knocked down.

carries two Collars 7, and a Compression Spring fitted between the lower Collar and the Double Bracket normally forces the Rod upward. The Rod can be depressed by pressing a trigger formed by two Bell Cranks without bosses. These are lock-nutted to the handle and engage ⅜" Bolts screwed into the upper Collar 7.

To load the gun the trigger is pressed and the Collar 5 pulled back against the Coupling 4. The trigger is then released and a Washer is placed on the Rod held in the Coupling 4. When the trigger is again pressed the Collar 5 is released and flies forward under the action of the Springs, so that it strikes the Washer and "fires" it towards the target.

The model is completed by drawing the heads and shoulders, and legs of three humorous figures on separate pieces of cardboard. The three cards depicting the heads are fixed to the 2½" × 1½" Flexible Plates of the stands by fine wire, and the legs are glued to Double Brackets bolted to the rear of the Flexible Plates.

Model-builders who do not possess sufficient Strip Plates to form the base of the model as described can replace these by a suitable sheet of cardboard cut to the correct size, and Strips can be substituted for Angle Girders in the framework of the stall.

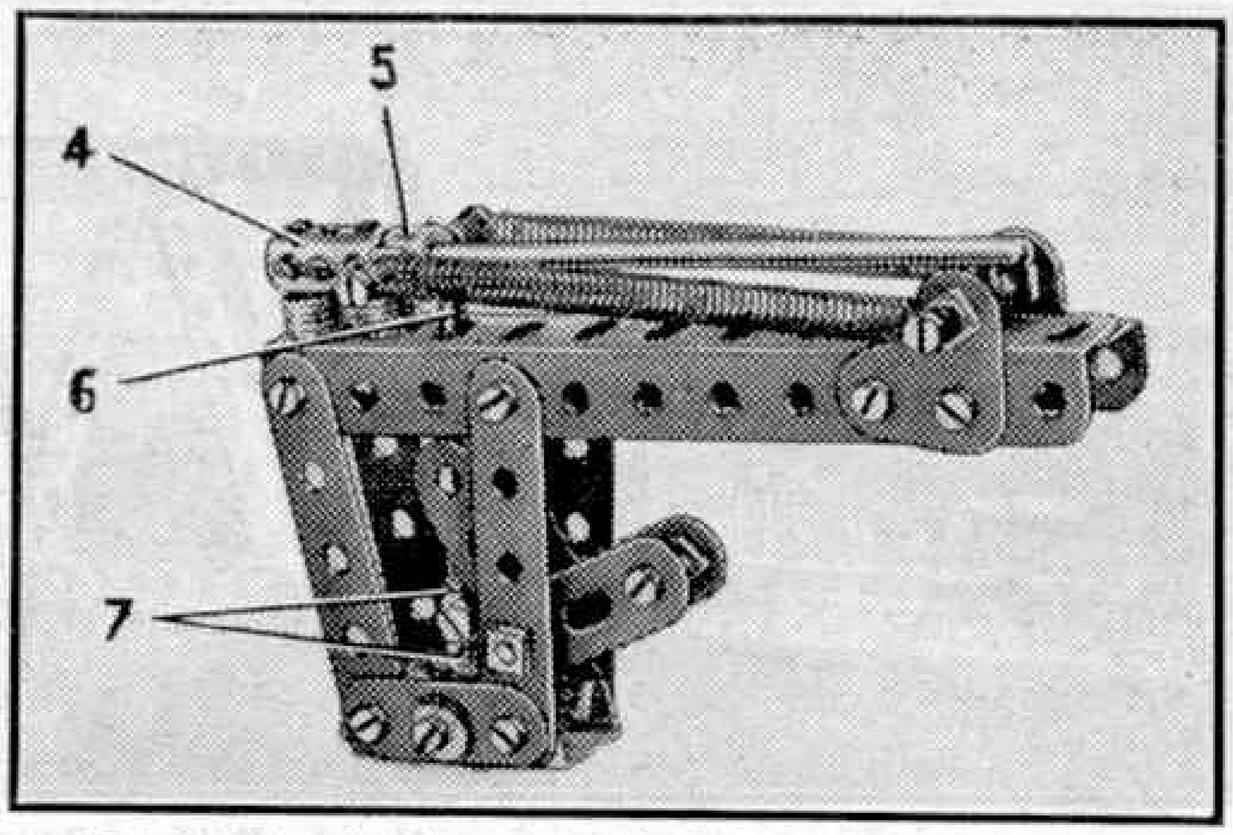


Fig. 3. The simple gun used with the Shooting Game.

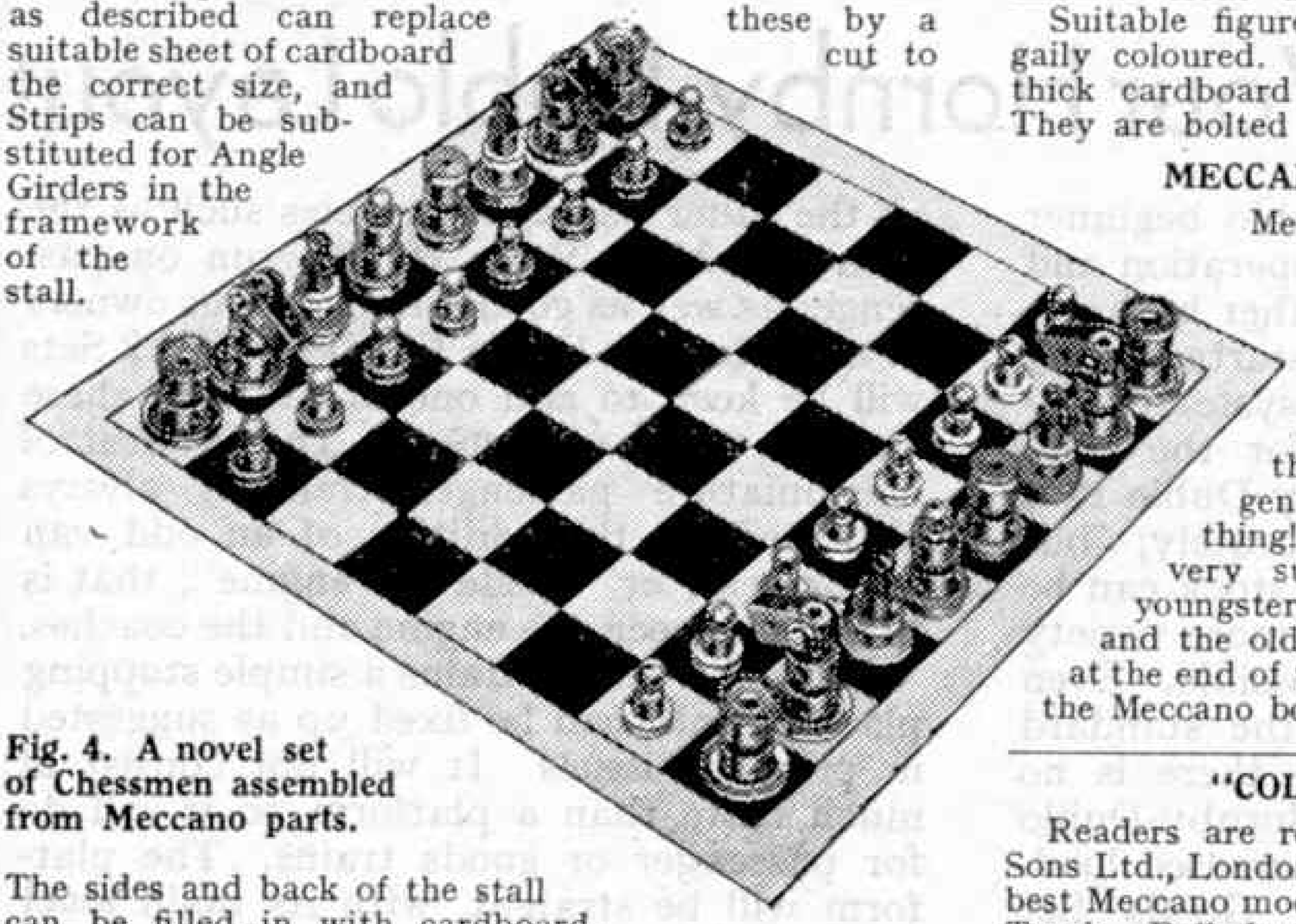


Fig. 4. A novel set of Chessmen assembled from Meccano parts.

The sides and back of the stall can be filled in with cardboard.

Parts required to build the Shooting Game:

4 of No. 1; 7 of No. 1a; 6 of No. 5; 8 of No. 6a; 4 of No. 8; 4 of No. 8a; 4 of No. 8b; 2 of No. 9; 2 of No. 9d; 9 of No. 11; 2 of No. 12c; 1 of No. 14; 1 of No. 15; 1 of No. 15b; 1 of No. 16b; 3 of No. 35; 110 of No. 37; 8 of No. 37a; 22 of No. 38; 2 of No. 43; 3 of No. 48; 4 of No. 59; 4 of No. 62; 2 of No. 63; 6 of No. 111a; 4 of No. 111c; 1 of No. 115; 1 of No. 120b; 2 of No. 127; 4 of No. 133a; 2 of No. 189; 2 of No. 190; 2 of No. 192; 4 of No. 196; 8 of No. 197.

A NOVEL WORKING TOY

A simple toy that can be easily and quickly assembled, and which will keep the younger members of the family amused, is shown in Fig. 5. This toy is operated by sliding the horizontal 12½" Strips in opposite directions. This causes the farmer's wife to fill the food trough and the chicken to attack his meal vigorously.

The 12½" Strips are connected by lock-nutted bolts to the 2½" Strips 1, and the food trough is supported by a Trunnion bolted to the 12½" Strip. A Fishplate 2 is fixed to the lower 12½" Strip, and acts as a stop to prevent the chicken from diving too greedily into his food.

Suitable figures should be drawn on paper and gaily coloured. The paper should then be glued to thick cardboard and the figures carefully cut out. They are bolted to the 2½" Strips 1 as shown.

MECCANO CHESSMEN

Meccano has been used or many interesting purposes apart from ordinary model-building, and one novel application is shown in the useful set of Chessmen illustrated in Fig. 4. Meccano users who are also chess players will find this a good way of providing an emergency chess-set in the absence of the real thing! Although a game of chess is not a very suitable form of entertainment for youngsters at a jolly Christmas party, father and the older folks may be glad of a quiet game at the end of the evening. Here then is a chance for the Meccano boy to use his Outfit to good purpose.

"COLLIS TRUCK" CONTEST

Readers are reminded that Messrs. J. Collis and Sons Ltd., London, are offering fine cash prizes for the best Meccano models of their well-known Collis Lifting Truck. Full details of this offer were announced in the November issue of the "*M.M.*" The Competition is open to all Meccano model-builders, and is divided into Home and Overseas Sections. The Home Section will close on 31st January, 1949, and the Overseas Section on 30th April, 1949.

Entries for the Competition should be addressed "*Collis Truck Competition, Meccano Ltd., Binns Road, Liverpool 13.*"

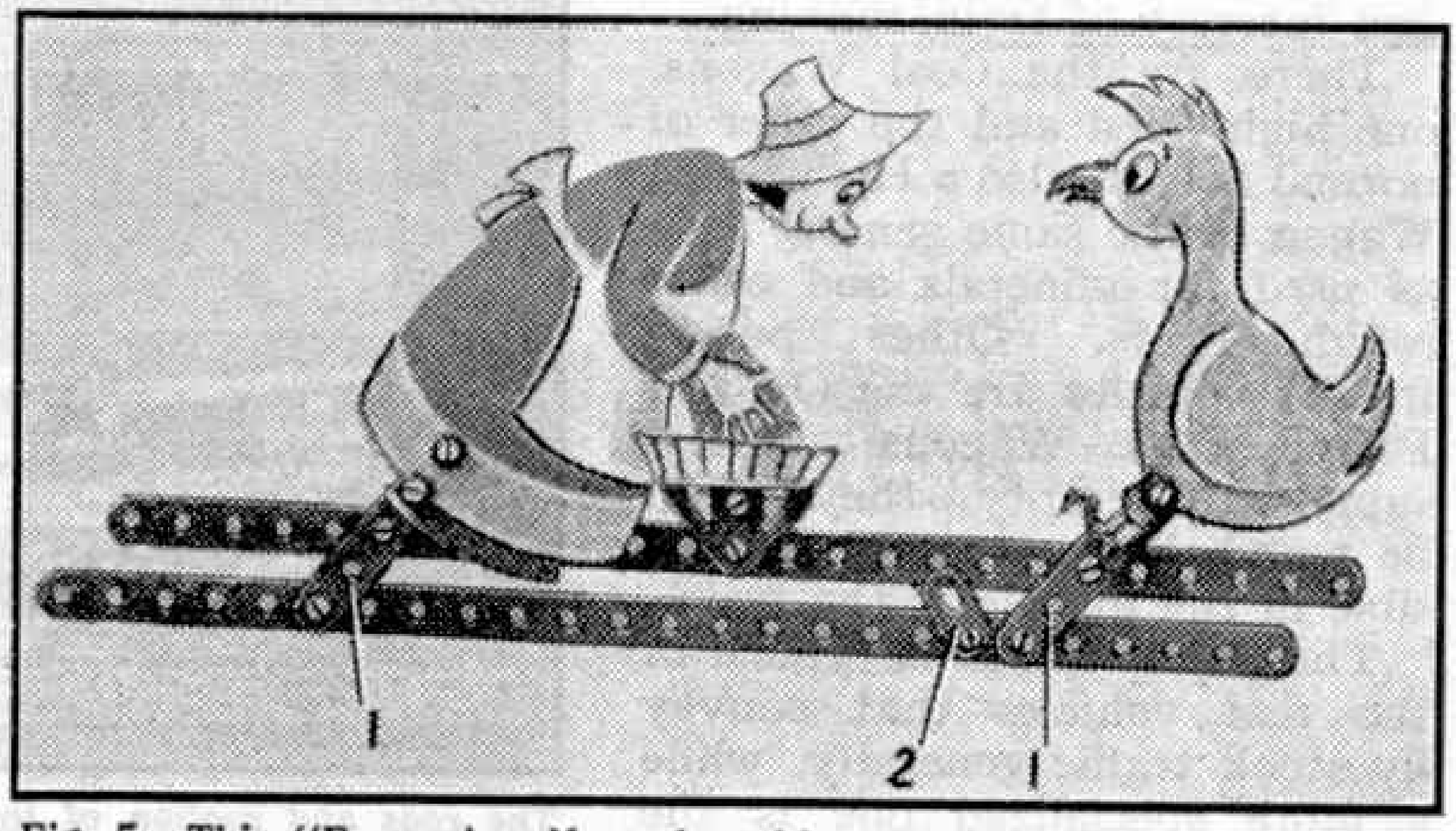
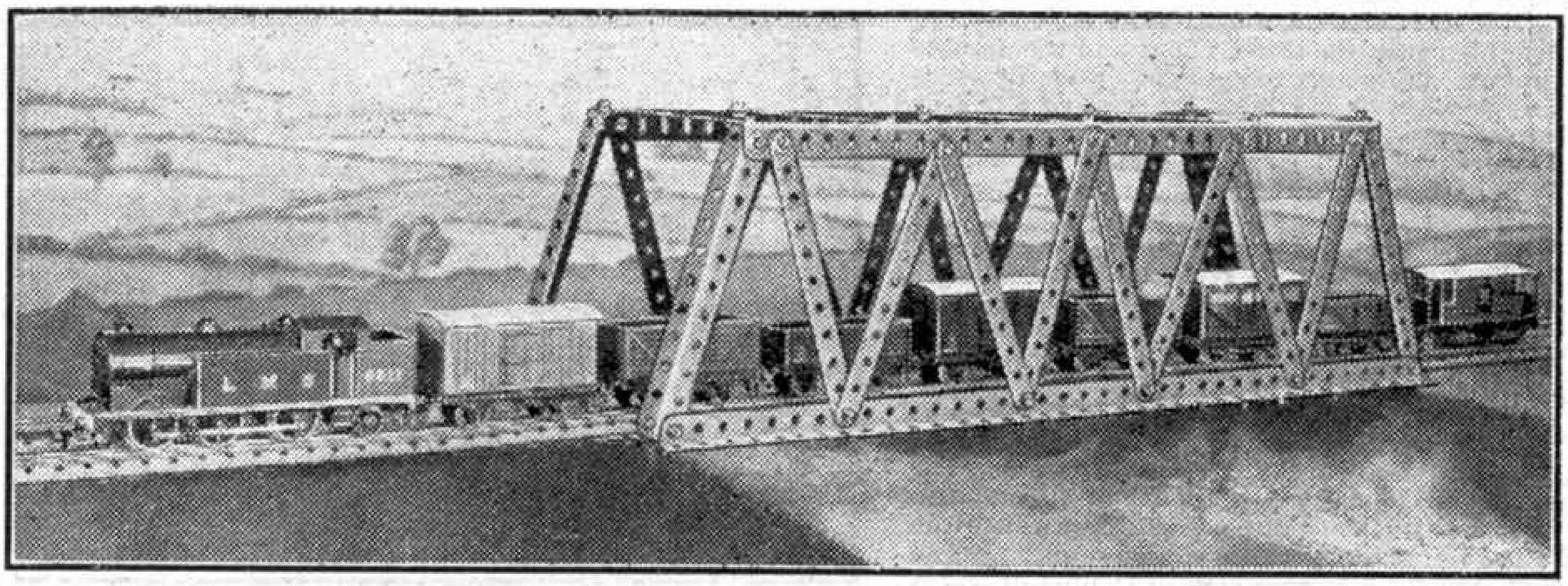


Fig. 5. This "Farmer's wife and pecking hen" toy forms an amusing novelty for a young child.



A mixed goods train on a Hornby-Dublo railway runs over a Meccano girder bridge.

Developing Your Hornby-Dublo Layout

AS soon as the Hornby-Dublo beginner has become used to the operation and control of his new train, whether he has a Passenger or a Goods Set, he starts looking for ways of developing the system. Extensions to the track are, for the time being, not possible, as Hornby-Dublo rails are not yet available separately; but certain items of goods rolling stock can be expected soon, so that a little more variety in train make-up becomes possible. Even one more vehicle added to the standard Set is an improvement; and there is no doubt about the capacity of Hornby-Dublo Locomotives to handle the increased load.

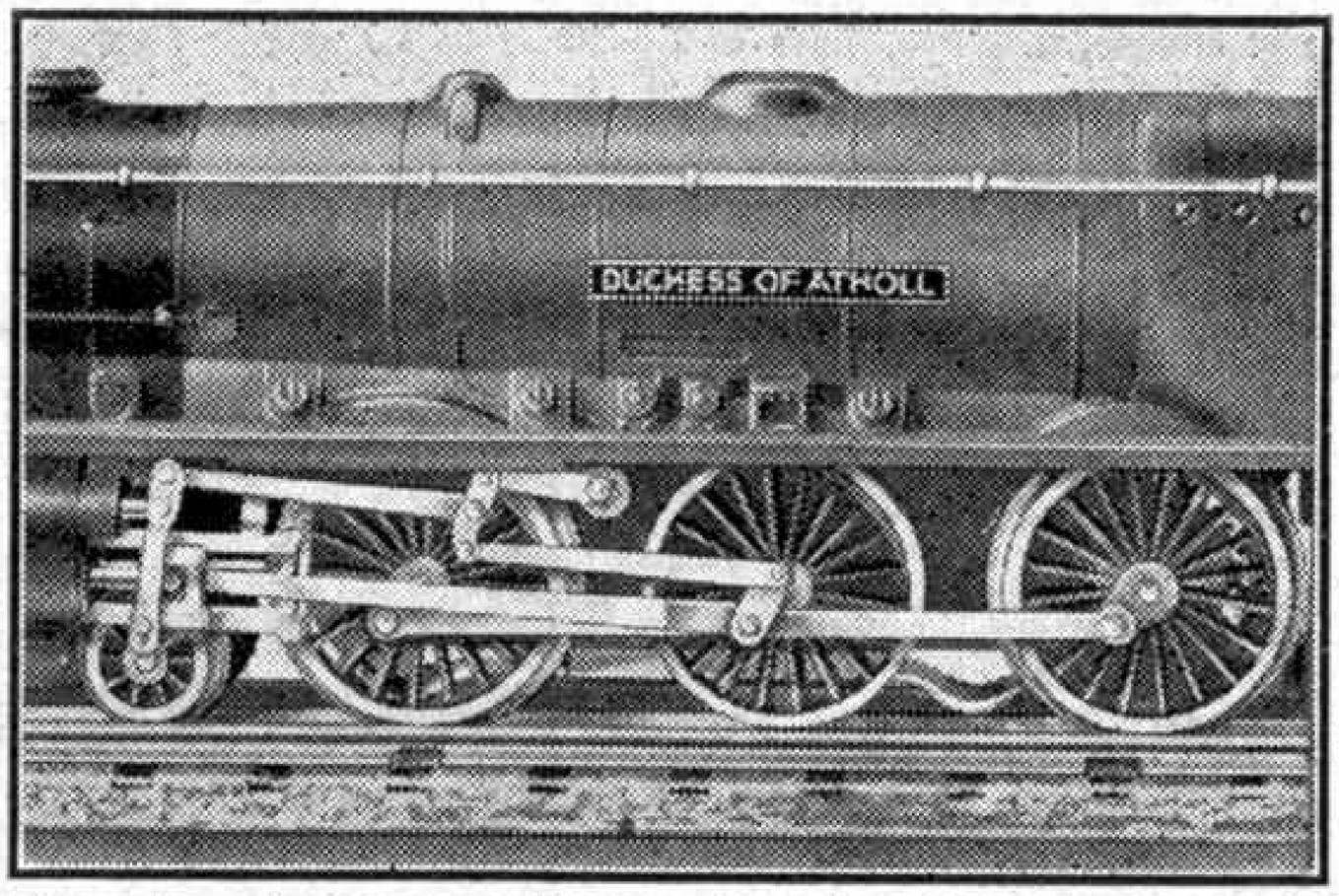
The Hornby-Dublo Tank Goods Set represents in its simplest form the familiar "local goods" of real life. Its standard Open Wagon and Goods Van provide for general traffic. In addition to these, however, the new vehicles include various more special types, any of which will add a lot to the fun and interest of train running.

There are the Coal Wagons, one high-sided and the other of normal height, also a High-Sided Wagon of the same general type as used for minerals and other rough loads. Other purely freight vehicles are the Oil and Petrol Tank Wagons. Unless supposedly "empty," they should be marshalled as nearly as possible in the middle of the train.

The Cattle Truck is typical of the real vehicles that convey livestock traffic generally, while a more specialized one is the Horse Box. These, together with all the other van-type vehicles such as the Fish and Meat Vans, can be run on passenger as well as goods trains. Thus owners of new Hornby-Dublo EDP1 or EDP2 Sets will be keen to add one or other of these Vans to their equipment. The interest of a miniature passenger train is always increased by the addition of an odd van at the rear, or "inside the engine"; that is to say, between the engine and the coaches.

To deal with the trains a simple stopping place or halt, can be fixed up as suggested in previous issues. It will not consist of much more than a platform, so it will do for passenger or goods trains. The platform will be straight, with its main level section no longer than one of the straight sides of the oval.

It is hoped that these items of rolling stock will be ready in the New Year.



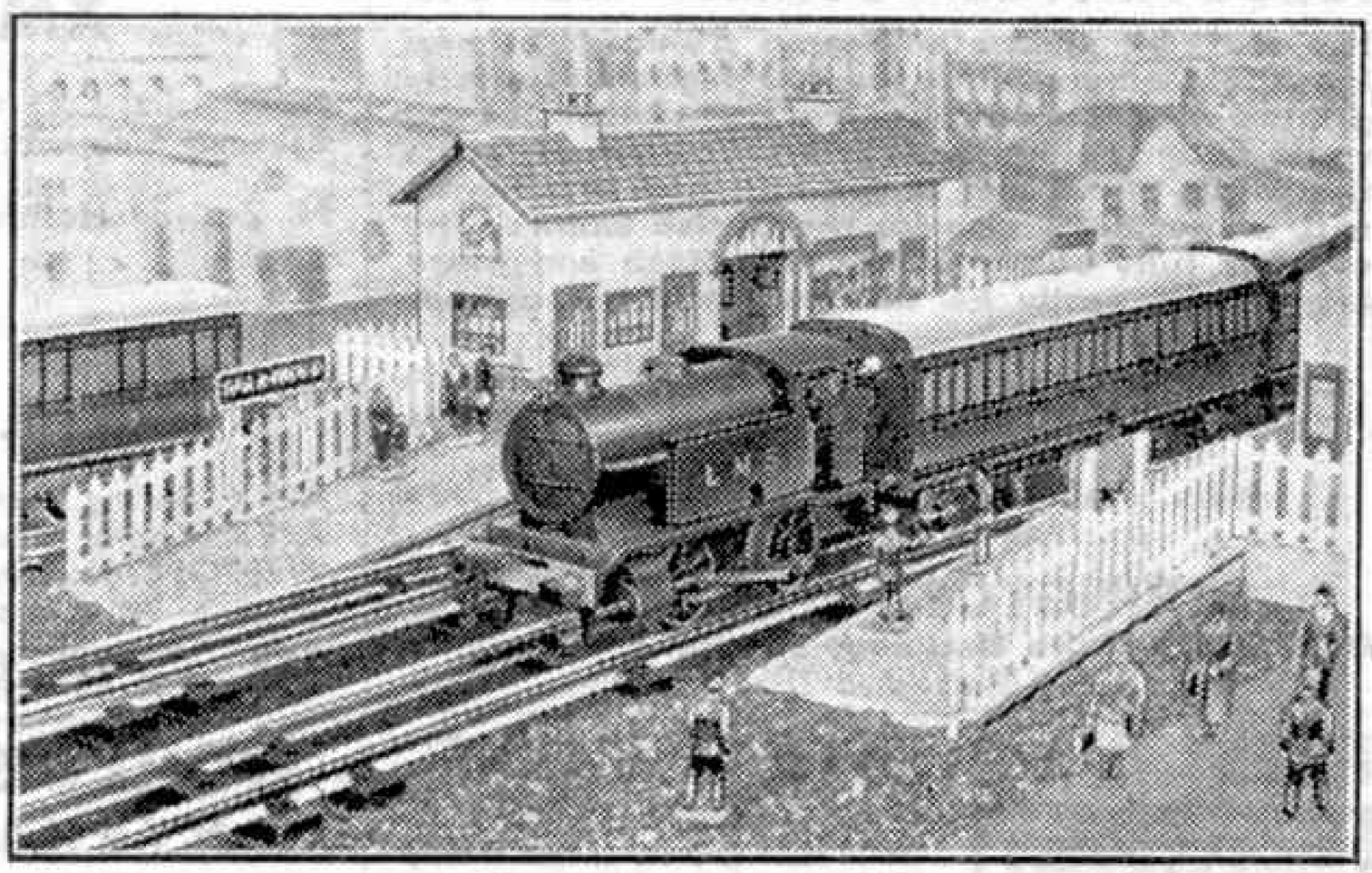
The rods and motion of the Hornby-Dublo "Duchess of Atholl." This mechanism has a most realistic action when on the run.

Fun with Hornby Tank Engines

ON miniature railways, as in real practice, a tank locomotive is a most useful engine. Hornby Tank Locomotives have always had a special reputation for smart work and general handiness. The No. 101 Tank Locomotive of to-day, formerly known as the M3, is a hard-working example of the four-wheeled design popular for miniature railway work of all kinds. This is the engine included in the No. 101 Passenger and No. 201 Goods Train Sets; the pictures on this page show one of these smart little Tanks at work.

The standard Train Sets provide suitable rolling stock for goods or passenger train working and either of these forms a good start towards further developments as additional rolling stock becomes available. With the contents of a standard Train Set only, plenty of entertaining running can be obtained. As one gets more used to the capabilities of the engine, and the engine itself becomes "run in," it is possible to arrange the amount of "wind" given to the mechanism so that a stop can be made at a definite point such as the station platform. The latter, for the time being, may be only a simple affair, perhaps just a thick book or a box lid as suggested on previous occasions in these pages.

As the railway expands, more variety in running becomes possible, and an interesting little scene is shown in the lower photograph. Here, a Hornby Tank

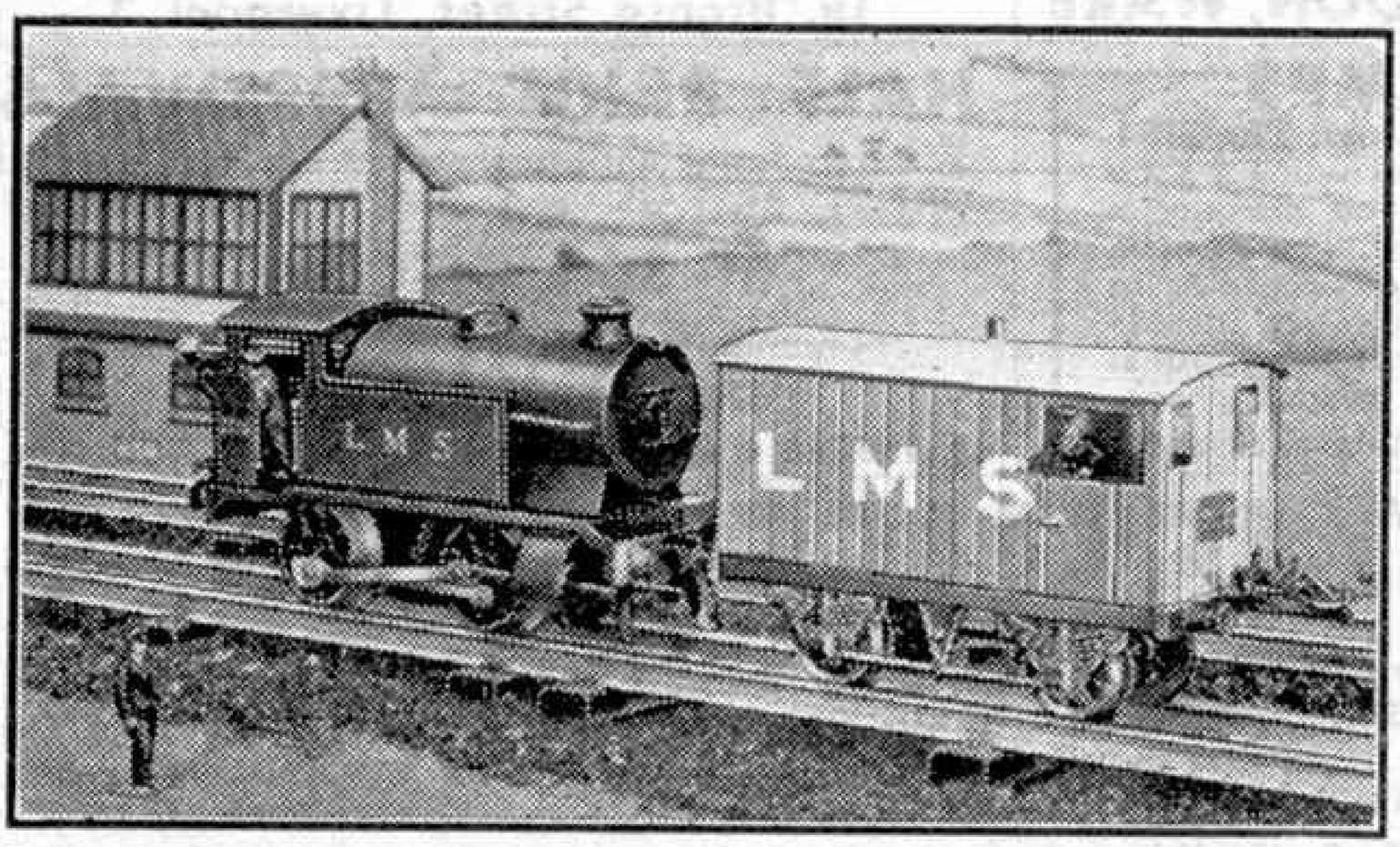


A local train of No. 2 Coaches leaving a suburban station on a Hornby layout. The engine is a Hornby No. 101 Tank.

on its way to pick up a train, is taking along a Goods Brake Van that will be required to complete the train when the various wagons have been assembled. This is a frequent sight in real practice.

Local or suburban passenger trains of either the standard No. 1 vehicles or of the larger latest No. 2 bogie stock, make another interesting job for a Hornby Tank Locomotive. The upper illustration shows a train made up of No. 2 coaches leaving a suburban station in miniature.

Naturally, whatever the duty, the keen Hornby railway operator will see that the engine carries the correct head-lamp indication. The No. 101 Tank is the smallest Hornby Locomotive that is provided with lamp brackets and a set of detachable headlamps is packed in each Train Set from the No. 101 upwards. Such details add much to the realism of working.



A Hornby Tank Engine and Goods Brake Van on the way to pick up wagons from various sidings "down the line."

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For other Stamp Advertisements see also pages 452 and xi.

Stamp Collecting

New Stamps from the Bahamas

By F. Riley, B.Sc.

IN our stamp tour of the Empire we have reached the Bahamas, in the West Indies, and before we leave these delightful islands we can take their stamp story a little further, for a new Bahamas pictorial set has recently been issued. This consists of 16 stamps, from ½d. to £1 in value. All are of the same size, that of the examples reproduced on this page, but they are in different colours. The framework and inset portrait of the King is the same throughout, and on each stamp is a scroll with the inscription: "1647 TERCENTENARY OF SETTLEMENT OF THE COLONY 1947."

The tercentenary of the colony itself was celebrated by the issue of five stamps in 1930, marking the 300th anniversary of the first recorded British settlement in 1629, as noted in the July *"M.M."* The new tercentenary issue is a reminder of a very interesting episode in the story of the colony, the first really serious settlement. This began with the formation in London of what was called the Company of Eleutherian Adventurers by Captain Sayle. The object was to form a settlement on the Island of Eleuthera, one of the most important of the Bahamas group. In due course the Adventurers reached the islands, but their hopes of wealth from mines and woods was not realized. Many of the settlers drifted home again, others went to the growing colonies on the mainland of North America, and eventually the Spaniards drove out those who were left.

Let us look at the interesting stamps that celebrate the 300th anniversary of this adventure. The 1½d. value, reproduced on this page, shows a cargo of sisal awaiting export from Nassau, the capital of the colony. This is a fibre used in making rope and twine, and it is obtained from a plant introduced into the colony from Central America. On the 3d. value, also shown here, typical examples of the fishing boats of the Bahamas are seen. These vessels have small draught, and they are used for transport of produce and goods to and from Nassau, the capital of the islands, as well as for fishing. Sport at sea is the subject of the 6d. value. One of the great game fish of the world is the tuna, which becomes particularly abundant in the waters surrounding the islands in the spring. The stamp design shows a motor launch, with an angler seated near the stern, presumably playing one of these fish with his rod and line, while a large tuna is strung up on the wharf on the left of the picture.

The Bahamas are famous for wonderful beaches, and of these Paradise Beach is shown on the 8d. value. The islands are becoming more and more popular as holiday centres. Probably one reason for this is that they are becoming increasingly accessible, now that transport by air is becoming common, and we have a reminder of this on the 5/- stamp, which illustrates modern transport by air and water. Other sports represented are yacht racing, the picture on the 1/- value showing three yachts racing past Fort Montague, and water ski-ing, illustrated on the 2/- stamp.

Of the other stamps two are concerned with life in the islands. The ½d. value shows the Infant Welfare Clinic, a new venture at Nassau; the 2d. value illustrates part of the open air market at Nassau, where examples of native basket work are exposed for sale. Of the industries of the colony agriculture naturally is important, and there are appropriate designs on the 1d. and 2½d. values; these show a tractor at work and a herd of milk cattle, typical of modern cultivation and modern dairying respectively. Salt production provides the design of the 10/- stamp, and shipbuilding in the islands is the theme of the 3/- design. The remaining two values, the 10d. and the £1, show respectively a large modern hotel built for the reception of holiday makers in the Bahamas, and the Parliament Buildings of the colony, including the Council Chamber and the House of Assembly.

This fine set will make a splendid addition to an Empire collection or a special West Indies display. A little ingenuity will perhaps be required to avoid monotony in the arrangement in the album of 16 stamps all of the same shape and size, but the result of this will be well worth while.

Before leaving the West Indies we should call at the Turks and Caicos Islands. These form a continuation to the south east of the Bahamas, from which they were separated politically 100 years ago. In 1873 they were annexed to Jamaica, but they have separate issues of stamps.

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6d. ea.: 170, 192, *212, 221, 222, 273, 274, 278, 283, 286, 291, 302, *303, 305, 308, 316, 317, 332, *368, *393, *401, 409, *410, *418, *452, *453, *459, *485, *502, 505, *510, *511, *513, to *521, 527, *559, *581 to *584, 588, 640, *672 to *675, *700, *703, *705, *706, *708, *709, *714, *726, *728, *730, 731, 732, *735, *736, *739, *742, *745, *747, *748, 751, *752, 753, *757, *759, *764, *766.

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Stamp Gossip
and Notes on New Issues

By F. E. Metcalfe

LAST month there was no room to illustrate the colonial "Silver Wedding" stamps, which are causing so much excitement among collectors of Commonwealth stamps, so this month they are getting pride of place, as they well deserve, in spite of all that has been said about them.

Without a doubt it was a great shock to collectors in general when the news first broke, for whoever would have thought that our conservative Colonial Office would have sanctioned issues with a face value of over £40. But we have more or less got used to the idea by now and, ever adaptable, those who can afford a full set have bought one, and thereby probably made a good investment. Those without £50 to spend on stamps are being satisfied with a set of low values only, and so peace seems to be reigning again, but it is to be hoped that the authorities will never permit such an expensive avalanche. Otherwise they will indeed kill the goose which has for so many years laid those golden eggs for a number of colonies that have had little else to help them to pay their way. That is no exaggeration, for it is indeed true that several of our smaller possessions have had to rely year after year on the sale of postage stamps to make ends meet.

American collectors also are feeling rather sorry for themselves, owing to the multitude of new issues which their Post Office is providing for their pocket money. Bitter as were the remarks made here at home when we first heard about the "Wedding" stamps, the Americans had harsher words still to hurl at us over the way they were going to be exploited, for of course they were convinced that they were the real target. They have had to tone down a bit since their own authorities got cracking, however, and yet it has got to be admitted that some of these new U.S.A. stamps really are interesting. This month we cannot resist illustrating two of them.

The first of these stamps is one issued to help to draw attention to the campaign held in September to promote youth welfare. September was called "Youth Month," and behind all the ballyhoo was the desire to help youth to choose the path which leads to good citizenship. Linn's *"Weekly Stamp News"* gave some details regarding juvenile delinquency etc. in the United States. Apparently every five minutes some American boy or girl is arrested for an offence serious enough to warrant the taking of their finger prints. Anyhow, collectors over here will be interested to know that the American authorities think that a postage stamp can help to stamp out juvenile crime, and there we can leave the matter.

The other stamp we are showing will be of interest to all. It was issued in August to commemorate the erection of the 200 in. telescope on Palomar Mountain. Trust our American cousins to have the biggest telescope, but it must be really a wonderful thing, and when it gets into full use next year we may hear some startling news of what has been found out about systems that hitherto have been beyond our ken.

As to its power, a light no brighter than that of a candle could be seen with its aid at a distance of 6,000 miles, and a photograph could be taken of the same light at 200,000 miles.

Our fourth illustration is a stamp from Portuguese Guinea. There was a time when Portuguese colonial stamps were the dullest of all dull stamps, and so few collectors in Great Britain were interested in them that generally they could be bought for anything up to quarter catalogue. But the Portuguese postal authorities, like those of other countries, are at last alive to the number of collector's pence that are to be had for the gathering. So instead of the old and dull numerals, they have provided a photogravure set showing animals, birds and types of human beings to be found in the colony concerned. The stamps have been printed by the famous Swiss firm of Courvoisier, which also printed the "Gandhi" stamps. Altogether a fine set.

It was quite a surprise when the Australian postal authorities announced the appearance of the "Boy Scout" stamp, to commemorate the Jamboree held in Victoria in the middle of November, and we will illustrate a copy in due course.

A seasonal word about albums, etc., for Christmas presents. For the last year or two supplies have not been equal to the demand, so if you want to make certain of an album, be sure and shop early, for there is still an acute shortage of good ones. Export trade takes the cream, and home dealers only get what is over. Another point; there are still a lot of cheap stamp mounts which should not be used on good stamps. Be sure and ask when buying if the mounts offered are entirely peelable. Good ones do exist, if you ask for them. They may cost a copper or two more per thousand, but they are well worth it.

And a final word for this month. If you do get a nice album for a present, treat it nicely if you want people to admire your collection. Above all, don't mount damaged stamps. They are not worth mounting and, far from adding to the appearance of value of your collection, they actually detract from it. Mount the stamps centrally in the spaces provided if the album is a printed one, and devote some time to planning an effective layout before mounting if plain leaves are used.

And now for a little tip. At the present moment a mint copy of the "Bell" stamp of Canada can be purchased for less than 6d., or for 6d. at any rate. This stamp had a very short life, and while no doubt a good few were put away, yet few dealers over here were able to stock up. There will come a time when a copy will cost as many shillings as it does pence to-day.

National Maritime Museum—(*Cont. from page 418*)

the seventeenth century collection of surveying and astronomical instruments that once belonged to Cardinal Barberini, a great scientist and contemporary of the astronomer, Galileo. This collection has been presented to the Museum by Sir James Caird, Bart., and it contains, among other things, some armillary spheres, constructed on Ptolemy's theory that the earth was the centre of the universe!

Coming nearer to our own times, there are later sailing ship models and also steamship models of all kinds in "Neptune's Hall," including some modern aircraft carriers, submarines and merchant ships. During my own visit I particularly noted a very large sailing ship model of the "*Queen*," sister ship to the famous "*Worcester*" which has been used as a training ship and is now condemned. This model, to a scale of ½ in. to 1 ft. (1/24th actual size) was built at Portsmouth at the same time as the ship herself, which was completed in 1839, bearing a figurehead of Queen Victoria, after whom the ship was named. Originally a 110 gun ship, she was converted to steam on her return from the Crimea, and, to counter the consequent additional weight, was reduced to 80 guns.

Of the many models of ships of our own century, I can only mention one or two as examples of the varied collection that is arrayed in Neptune's Hall, and to which additions are frequently being made. There is, for instance, a ½ in. to 1 ft. (1/24th actual size) builders' model of H.M.S. "*Thrush*," in which King George V had his first command, when he was Prince George. The "*Thrush*" was built in 1890 by Messrs. Scott and Co. of Greenock. Messrs. Robertson of Glasgow have recently presented a model (scale 1/8 in. to 1 ft., or 1/96th actual size), of their s.s. "*Corundum*," built by John Lewis and Sons Ltd., of Aberdeen. The "*Corundum*" was one of the small coasting vessels that saw such good service round our shores during the last war.

Even this brief survey of just a very few of the exhibits in this wonderful Maritime Museum will, I hope, arouse a keen desire among readers to see this valuable treasure-house of ours at Greenwich, in South East London. At least a day should be devoted to your visit, and do not be deterred by the thought of having to spend time mid-day and mid-afternoon searching Greenwich for a meal, as the Museum has its own restaurant on the premises, where lunches and teas may be obtained at reasonable prices. I am sure you will want to return again after your first introduction.

Mechanical Surface Excavation Plant—

(*Continued from page 441*)

and it is an extremely rare thing to see a dumper bogged down even in two feet of semi-liquid mud. The Muir-Hill Dumper, which is reproduced in miniature as No. 562 of the Dinky Supertoys series, is very widely used, and is an example of the versatility of modern British automobile engineers. The loaded body, when the locking catch is released by the driver, tips forward by gravity, resets and locks in position automatically by means of powerful coil springs. It is placed high up over the larger driving wheels. The driver sits behind, over the smaller (steering) wheels, with the engine beside him, and on the later types of dumper his seat is reversible, with duplicate sets of controls, so that he may face forward in either direction of travel. This is necessary when a journey over public roads is contemplated, as only vehicles in which the driver faces the direction of travel are granted a licence for this.

The very latest type of Muir-Hill Dumper, designed for large-scale operations, carries 6 cu. yds., more than many lorries will take, and is powered by an A.E.C. 41 h.p. diesel engine, developing 96 b.h.p. at 1,800 r.p.m. A single gear-box provides four speeds forward and three in reverse, that is the "vehicle" and "dumper" directions respectively, with a maximum of some 30 m.p.h.

Have You Ever Thought About This?—

(*Continued from page 433*)

interfere with it. He will adjust the blower to prevent smoke, and perhaps feed some water into the boiler to avoid noisy blowing-off at the safety valves in the station precincts. He can then stand easy until the train starts. The Driver may sometimes leave the cab to complete his oiling of the motion and satisfy himself that everything is in order. He may also look at the vacuum gauge in the front guard's van to check the reading compared with the engine gauge. On his return to the footplate you may see him giving his window a clean with his cloth, and by now it will be time for you to take your seat, or you will be left behind!

Meccano in the Laboratory—(*Cont. from page 423*)

weighing arm W which tips when the correct weight is in the pan. This stops the motor M and also delivers the powder to the chute B, the arm then returning to the horizontal position in readiness for the start of the next cycle. The set up is in frequent use, and gives an accuracy in weight of 1 per cent.

The two mechanisms were designed by Mr. A. J. Kent, B.Sc., and the photographs on page 423 were taken by Mr. R. E. Jones, both of the Physics Division.

Puzzle Your Sharp-Eyed Friends—

(*Continued from page 428*)

themselves together too? However did you guess?"

And here, by way of a grand finale, is the famous—

FLOWER GROWING TRICK

I used to do this in a comic Chinese show and it isn't a bad idea to dress up in a dressing gown and a cone shaped Aladdin kind of hat, made of cardboard, plus a long skinny moustache, when you perform it. A Chinese sounding record on the gramophone helps too. You show a large cone to be quite empty. You place a tray across the top of a small screen put a flower pot on top and fill the pot with sawdust. Then you plant a teeny twig, cover it with the cone and the twig grows into a lovely rose bush with roses on it, let's hope all of the same colour unless you've let your enthusiasm run away with you.

How to do it. You need a second cardboard cone that fits snugly into the first. It is quite easy to make them by cutting the cardboard into a segment of a circle as shown in Fig. 7. It is a good idea to make a newspaper pattern first. Paint the inner cone dead black. The rose bush is made of artificial leaves and artificial roses fastened with florist's wire to a number of thick stiff wires. It is fixed into a wooden base a little smaller than the top of the flower pot (see Fig. 8, page 428).

On your stage this cone with the rose bush inside it stands hidden behind the small screen, as in Fig. 9 (page 428). Show the empty cone then put it down behind the screen with one hand while you remove the screen with the other. Of course you put the cone down over the one containing the rose bush. Show the screen on both sides, then stand it near the front of the stage, this time with the hinged side away from the audience. Place the tray on top and the audience can see there is no mechanism concealed under the tray. Fill the pot with sawdust and plant a tiny twig. Now pick up the cone and in doing so pick both cones up together, crooking your finger through the ring on top of the rose bush and bringing that up as well. Place it firmly on top of the flower pot.

Now you gravely pick up a tiny toy watering can and pretend to water the twig inside the cone. Put the can down and hold up a yellow cardboard "sun." All this with your Chinese get-up will produce plenty of laughs. Finally take the cone and, lifting both cones together, slowly reveal the rose bush.

That's all. Rehearse carefully and you'll be as unsee-through-able as a brick wall.

Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Find These Hidden Names

Readers of this December issue of the Magazine will scan the advertisement pages with great eagerness in order to see what good things are offered to them. As usual therefore we are basing our first contest this month on these pages.

In the panel on this page there is a rectangle of letters, 80 in all. These have been arranged so that the names of advertisers, or in some cases of their products, can be read in them. These names are traced by starting anywhere and passing at each move to the letter above or below it, or to that on the right or the one on the left. Diagonal moves are not allowed. In order to complete the list of advertisers or advertised products every letter in the rectangle must be used at least once. There is no limit to the number of times any particular letter can be included in the names.

B	A	O	L	L	L	A	L	A	H
R	E	W	S	A	R	O	F	S	E
O	Y	T	E	N	D	H	O	B	G
S	K	O	Y	S	A	E	M	B	D
D	N	O	B	T	C	C	C	I	I
R	I	W	N	R	A	H	S	E	R
Y	D	E	X	O	N	C	U	L	F
E	L	M	A	H	E	R	R	E	S

In certain cases initials are used, but this is done only where the initials are distinctive and actually appear.

In their solutions entrants must give not only the names of the advertisers or products, but also the numbers of the pages on which the advertisements concerned appear. Entries should be addressed: *"December Advertisement Contest, Meccano Magazine, Binns Road, Liverpool 13."* There will be two Sections, for Home and Overseas readers respectively, and in each there will be prizes of 21/–, 15/– and 10/6 for the best entries in order of merit. In addition there will be Consolation Prizes for other entries deserving of recognition, and the judges will take the novelty and neatness of the entry into consideration if necessary.

Closing dates: Home Section, 31st January 1949; Overseas Section, 31st May 1949.

A Fine Party Quiz

Here is a very interesting puzzle of a type that will provide great fun and amusement at the many parties held during the Christmas and New Year season. It is the work of our reader Michael Cooper, Romford. In it there are 15 clues, and in each case the solution is the name of a town or place in Great Britain. The spelling of the place name is not necessarily that of the actual word or words of the solution, but in all cases the sound is right and conveys the correct meaning. This is perhaps best illustrated by an example. Suppose the clue to be "What an audience should do after speeches." The answer to this is "Clapham."

Now try to find the place names indicated below:

1. What the footpad said.
2. What striking a reef usually does to ships.
3. What bad cooks do to cakes.
4. Sometimes given on a 21st birthday.
5. Forbidden to motorists after 11 p.m.
6. Modern shopping feature.
7. What the dog next door is always doing.
8. One more than six of a certain tree.
9. Every ship needs one.
10. Seen at the beginning and end of a play.
11. Sometimes found on the tablecloth.
12. What the foreman said to the painter.
13. Painful operation by doctor or dentist.
14. An unappreciated wine.
15. Part of a famous cat.

As usual in these Contests there will be two sections, one for Home readers and the other for those living Overseas. In each of these sections prizes of 21/– 15/– and 10/6 will be given to the senders of the best solutions in order of merit, and in addition there will be Consolation Prizes for other good efforts. If there is a tie for any prize the judges will base their decision on the neatness and novelty of the entry itself.

Solutions must be sent to *"December Quiz Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing dates: Home Section, 31st January 1949; Overseas Section, 31st May 1949.

December Photographic Contest

The subject chosen for our December competition, the last of the 1948 series, is a Christmas scene. This may take many different forms, indoor or outdoor, and there is no restriction on the efforts of competitors except that somewhere in the picture there must be a suggestion of Christmas. A traditional Christmas outdoor scene, with snow and ice, and winter sports in full swing, would be suitable, and indoor photographs showing parties in progress, unwrapping presents and so on will be equally acceptable.

Two conditions must be observed. The first is that the photograph must have been taken by the competitor, and the second that on the back of the print must be stated exactly what the photograph represents.

Entries will be divided into two sections, A for readers aged 16 and over and B for those under 16. They should be addressed *"December Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13."* There will be separate sections for Overseas readers, and in each section prizes of 21/–, 15/– and 10/6 will be awarded. Closing dates: Home Section, 31st December; Overseas Section, 30th April 1949.

Fireside Fun

"There I was, face to face with a savage lion. There were only five feet between us when I saw him . . . ."

"Strange. I have never heard of a lion with three feet."

* * * *

"I thought you said the fire bell had gone."

"So it has—someone's pinched it!"

* * * *

"I suppose you sailors have to be very careful on your ships."

"Oh, no, mum. We have orders to be as wreckless as we can."

* * * *

"Now let me see, Jones, you have a lot of history to make up after your absence. How long have you been away?"

"Since the Wars of the Roses, Sir."

* * * *

"And this, ladies and gentlemen, is the room where the cruel King had his nephew murdered."

"You said that in the room opposite last year."

"Yes, sir, but we can't go in there now. It is being repainted."

* * * *

"A grasshopper can jump 200 times its own length."

"That's nothing. I once saw a wasp throw a 14-stone man off the ground."

* * * *

"Shall I tell you your fortune, sir?"

Yes. How much."

"Sixpence only, sir."

"You're quite right."

* * * *

"You were very brave to save your pal from the hole in the ice."

"Had to, sir—he's wearing my skates."

BRAIN TEASERS

AN EASY WORD SQUARE

Six words, each of six letters, are required to fill up the spaces in the diagram shown below. The clues to these, all "across," are as follows: 1, Gay; 2, Lizard; 3, Relative; 4, Floating on the surface; 5, Surround with a halo; and 6, Small farmer.

1					
2					
3					
4					
5					
6					

When the word square has been filled in it will be found that the first and last vertical lines give the names of two famous English football players.

* * * *

CRAZY ARITHMETIC

Did you know that half of 9 with 50 added gives nothing? Or that half of 40 is 6? Can you explain these seemingly crazy but accurate statements?

* * * *

"I'll bet the boss was wild when you told him I was leaving next week."

"Not arf. He thought it was this week."

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

The two aircraft names in our first puzzle last month were BRABAZON and ZEPPELIN.

The scores in the five matches played by the team referred to in our second puzzle were 1 – 0, 1 – 0, 0 – 2 at home, and 0 – 0 and 0 – 3 away.

The boy in our third puzzle solved his problem by filling the large jug, and from it filling the second, the contents of which he then threw away. This left him with two pints in the large jug, and he transferred this quantity to the small jug. He then re-filled the large jug and from it poured out the one pint required to fill the small one. This left him with four pints of water in the large jug.

With the missing words inserted the sentence required in our fourth puzzle was "A NOTABLE surgeon was NOT ABLE to operate because there was NO TABLE."

* * * *

THIS MONTH'S HOWLER

A gunboat is used for shooting rapids.

INDEX
Vol. XXXIII
Jan.–Dec., 1948

Aircraft:—Bristol "Brabazon," 110, 330; Freighter Aircraft, 45, 50; Helicopter Developments, 74, 119; Jet, 372; Parasite, 434; Saunders-Roe SR/45, 110, 330; Short type, 256
Air News, 12, 45, 88, 119, 156, 194, 230, 267, 304, 346, 388, 424
Ancient Crafts of Buckinghamshire, 340
Aviation:—Airspeed Record, Britain's new, 73, 109, 194; Automatic Flight, 17; Flying Safely Through Cloud, 6; Height Record, Britain's New, 187; Helicopters at Work, 146, 156, 309; Helicopter Speed Record, 304; "Made to Measure" Take-Offs, 296; Mapping by Air, 218; Qantas "Kangaroo" Service, 337; Western Union Air Command, 419

Books to Read, 10, 47, 87, 113, 154, 193, 222, 262, 297, 347, 384, 422
Broaching Machine, World's Biggest, 199

Carillon, The, 430
Clocks:—Clock "Jacks" and their Story, 226; Coningsby Church Clock Restored by Welding, 310
Club and Branch News, 21, 57, 97, 134, 163, 201, 235, 273, 313, 353, 395, 443
Cold, Extreme, 382
Competitions Page, 32, 69, 99, 135, 174, 213, 246, 284, 324, 364, 406, 455
Conjuring Tricks for Christmas, 426
Cranes, Modern Mobile, 334

Dates from California, 150
Dinky Toys and Supertoys:—Aveling-Barford "Grantham" Roller, 55; Bedford Articulated Lorry, 192; Bedford End Tipper, 77; B.E.V. Electric Truck, 263; Dumper Truck, 345; Foden 14-ton Tanker, 429; Forward Control Lorry, 192; Garden Roller, 192; Heavy Tractor, 263; Massey-Harris Farm Tractor, 192; Refuse Wagon, 345; Standard "Vanguard," 429; Triumph "1800" Saloon, 263

Editor, With the:—Air and Rail in 1947, 1; A Strange Discovery, 289; Britain's New Airspeed Record, 73, 109; British Aircraft Industry, 369; Famous Station that was a Joke, 217; Faster than Sound, 253; Locomotives for British Railways, 145; Motor Racing, 181; New Pennine Tunnel, 369; New Winter Trains, 329; Rapid Track Renewal, 289; Scrap Only in Name, 109; Three Hundred Million Volts, 253; Trolley Bus Mystery, 329
Engineering Notes, 9
Excavators:—Digging by Machinery, 293; Mechanical Surface, 440

From Our Readers, 20, 54, 162, 212, 234, 286, 303, 351, 408, 442

Gas Turbine Goes to Sea, 5

Have You Ever Thought About This?, 223, 350, 433
Highway, Florida Overseas, 268
Hornby-Dublo Railways:—Beginners, Hints for, 400; Dublo Trains and Dinky Toys, 168; Goods Train Running, 132; Goods Yard Operations, 240, 318; Lineside Accessories, 358; New Trains, 26; Scenic Hints, 96; Simple Operations, 206; Simple Stations, 278; "*South Essex*," 62
Hornby Gauge 0 Railways:—Casebrook Electric layout, 319; Clarke (Leicester) Clockwork, 401; Cleaning and Oiling Hornby Trains, 359; Couplings, Rolling Stock, 207; "*Fenton and Middleton*," 279; Freights for Hornby Railways, Varied, 169; Goods Yard Working, 63; "*Launceston and Avondale*," 27; Lineside Accessories, 241; Rolling Stock, Notes on, 133
Hydraulic Riveting in the Shipyard, 392

Laxey, Big Wheel of, 380
Life-Boat:—Building a, 376; Submersible Tractor for, 438

Meccano Collis Truck Competition, 396
Meccano in the Laboratory, 423
Meccano Models:—Amusing working models, 238, 446; Blacksmith, 356; Boxer and Punch Ball, 204; Bus, Single-deck, 60; Cement Mixer, 356; Child's Chair, 94; Cranes, 61, 94; Jeep, 316; Lawn Mower, 166; Locomotives, Tank, 24, 316, 398; Motor Launch, 130; Saloon Car, 130; Steam Engines, 25, 166, 204; Swing-Boat, 398; Trolley Bus, 276
Model-Builders, Among the:—Brakes, Cable-operated, 58; Brakes, Internal Expanding, 22, 274; Cranes, 202; Crankshaft, Variable, 354; Driving Unit for Tramcar Bogie, 444; Eiffel Tower, 275; Free Wheel, 203; Front Wheel Drive, 128, 314; Gear-Box, 165; Grab, Crane, 92; Meccano Parts, How to Use, 22, 58, 92, 128, 164, 202, 236, 275, 315, 355, 445; Mechanism for Roundabout, 164; "Penny-in-the-Slot" Device, 314; Push-Button Clutch, 354; Reversing Mechanism, 92, 237; Variable Cutter, 274
Museums:—Greenwich ("The Look Out"), 14; National Maritime, 416

Nature:—Banff National Park, 182; British Dragonflies, 190; Canada's Forest Giants, 260
Northern Ireland Transport Display, 390

Of General Interest, 161
Oil for Britain:—From Well to Refinery, 2; Principles of Oil Refining, 42; Results of Refining, 82; Chemicals from Petroleum, 158

Peat Farm, Visit to a, 78
Photography:—Club Outings, 155; Cycle and Camera, 323; Gaslight Prints, 391; Lamb Hunting, 123; Making an Album, 432; Seaside, 272; Snapshot Album, 352; Springtime Activities, 98; Sunshine, 200; Table-Top, 52; Water in Pictures, 312
Power Across the Sea, 370

Railway Locomotives:—Britain's First Main Line Diesel, 41, 290; C. and O. Turbine-Electric, 385; London, Midland, Recent, 116; North Eastern No. 1621, 229; Oil Burners in the Western Region, 148
Railway Notes, 18, 48, 80, 124, 152, 188, 224, 270 298, 338, 378, 436
Railway Runs:—"The Chinook," 196; Last of the "Claughtons," 306
Railways:—Chicago Railroad Exhibition, 420; Cyprus Government, 394; Great Northern, Centenary of, 73, 84; G.N.R. (I.) Express Trains, 375; London Central Line Extension, 264; Netherlands, 386; Rye and Camber Tramway, 118; Tender Water Gauge, Unusual, 333; "Travelling Post Office," 76
Robb, Air Chief Marshal Sir James, 419
Road and Track, 122, 233, 259, 336
Royal Doulton Figure, Making a, 300

Ships:—"*Andes*," Royal Mail, 114; "*Athenic*," 381; "*Calchas*," Blue Funnel, 149; Deep Sea Disguise, 292; "*Duchess of Hamilton*," 221; Dummy Warships, 90; "*Kantara*," 381; P. and O. Liners, 40; Romance of Ship Names, 342; Tankers "*Linga*" and "*Lotorium*," 11; Whale Factory, 414
Sponge Fishermen of Florida, 126
Stacking Trucks for Factories, Collis, 46
Stamp Collecting, 29, 65, 101, 137, 171, 209, 243, 281, 321, 361, 403, 451
Stephenson, George, 254

Tinplating, Electrolytic, 348
Tramcar, Glasgow's Luxury, 38

Water for a Desert, 184
Wool Weights, 120

Send in some of your own holiday pictures. You may be one of the lucky prize-winners

60 PRIZES

including 35 in cash as follows:

2 of **£5**
3 ,, **£2**
10 ,, **£1**
20 ,, **10/-**

and twenty-five Consolation Prizes of Photographic Chemicals.

1948 JOHNSON PHOTOGRAPHIC COMPETITION FOR AMATEURS

JOHNSONS prize print competition—the last this year—closes on 31st December 1948. All amateur photographers may enter. Any camera may be used. Contact prints or enlargements may be sent. No entrance fees to be paid and no entry forms have to filled in. All you have to do is to stick a label or title panel from a JOHNSON photographic chemical bottle or package on the back of each print you send in. No limit to the number of entries which may be submitted. Every type of subject is eligible. Children, animal, home and holiday snapshots. Landscape, seascape, river or street scenes. Garden, flower or tree studies. Architectural, interior or table-top subjects. Prints need not be mounted. Enlargements need not exceed whole-plate size. Name of camera, size of film or plate, developer used and exposure given should be recorded where possible. Write your name and address clearly in block capital letters on the back of each print. Do not send the negative, although we may wish to buy or borrow it if you are a prize-winner

CLOSING DATE DECEMBER 31st

Prize-winning prints, not the negatives, will become the property of JOHNSONS. All others will be returned if sufficient postage stamps are enclosed with the entry. All entries must be marked COMPETITION DEPT. and be addressed to

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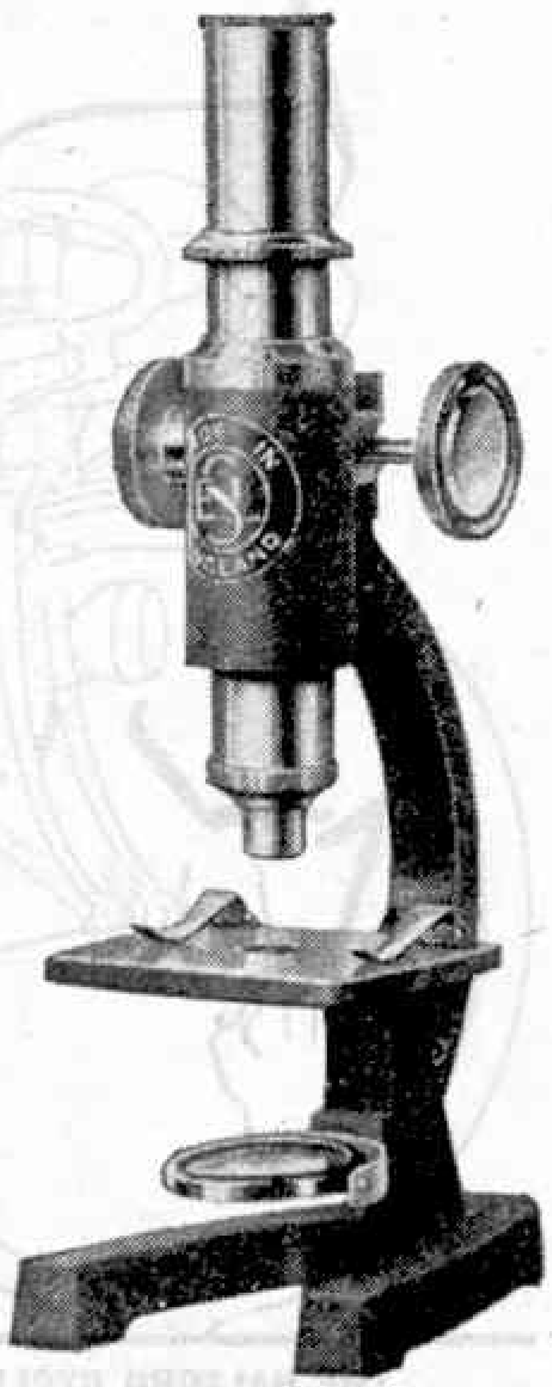

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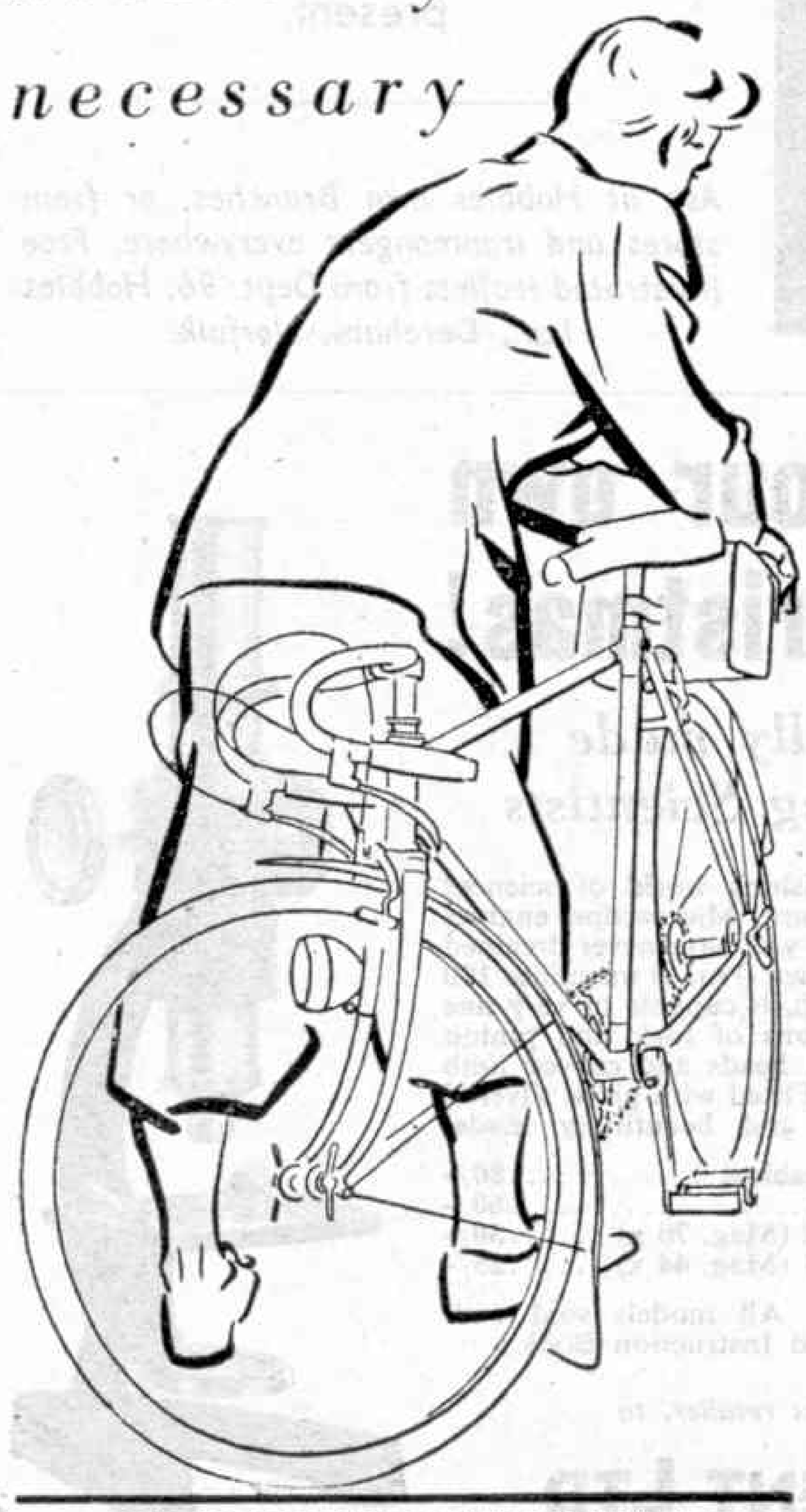

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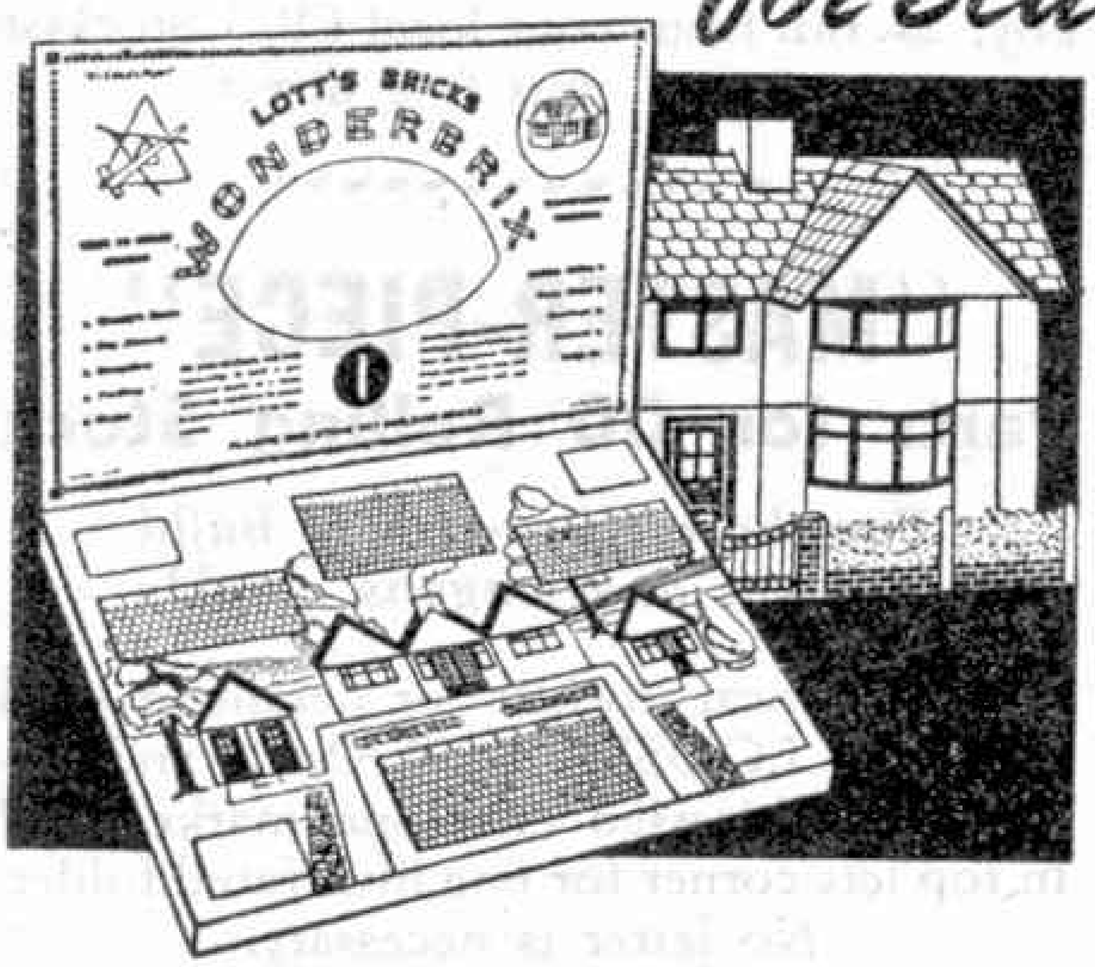

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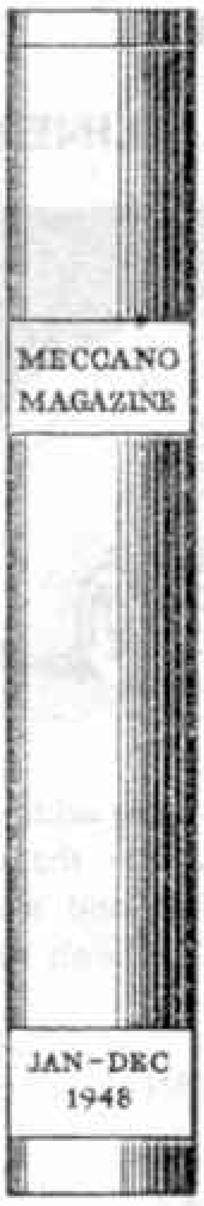

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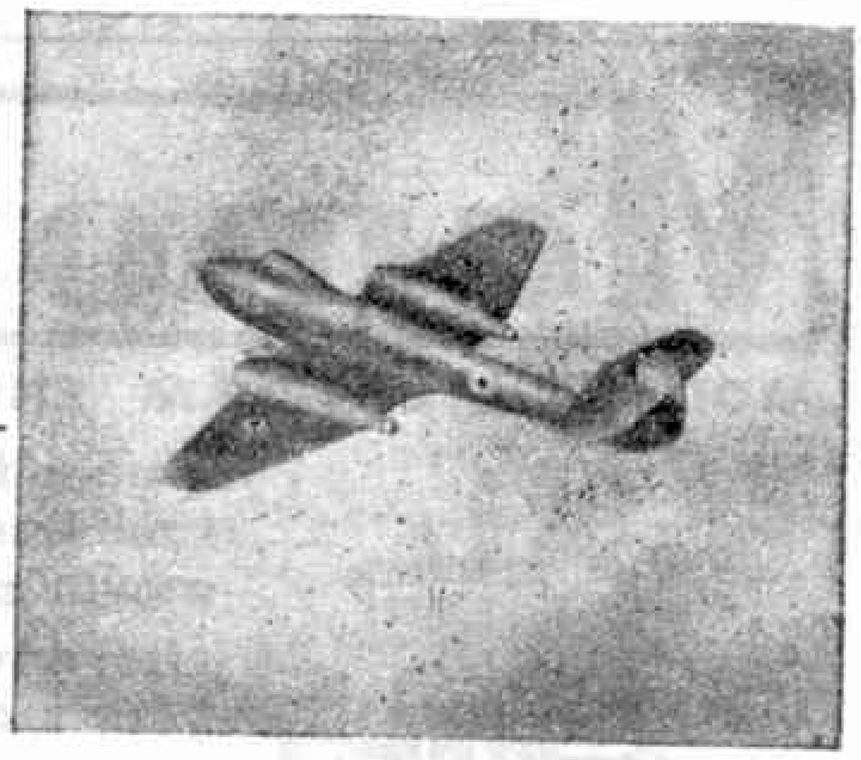

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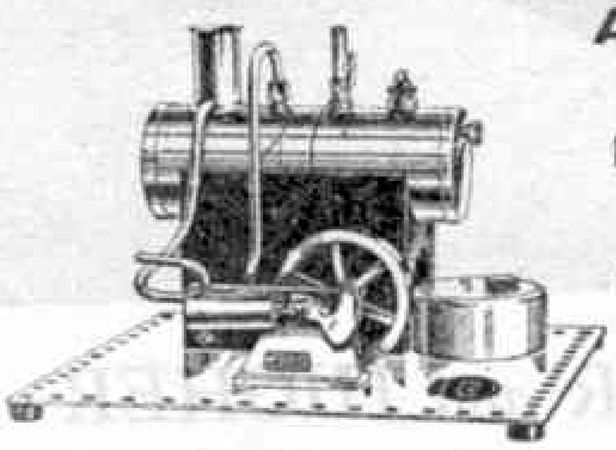

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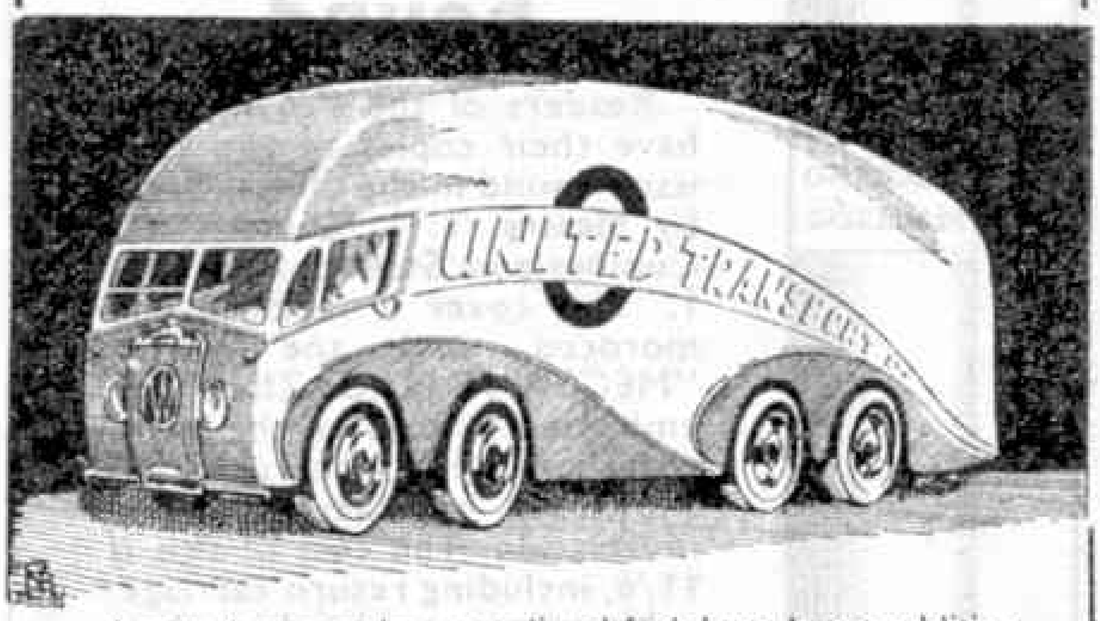

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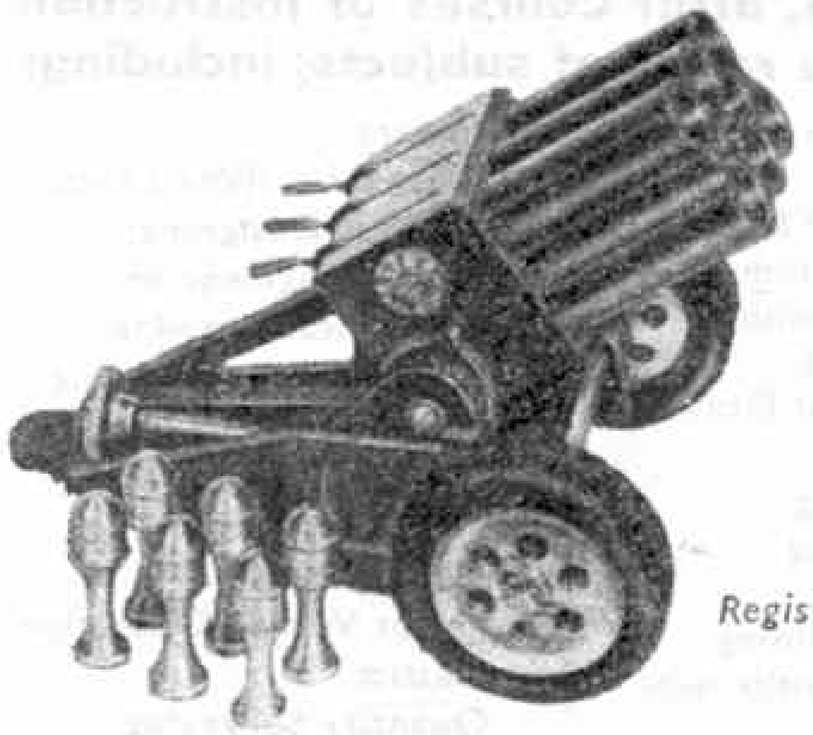

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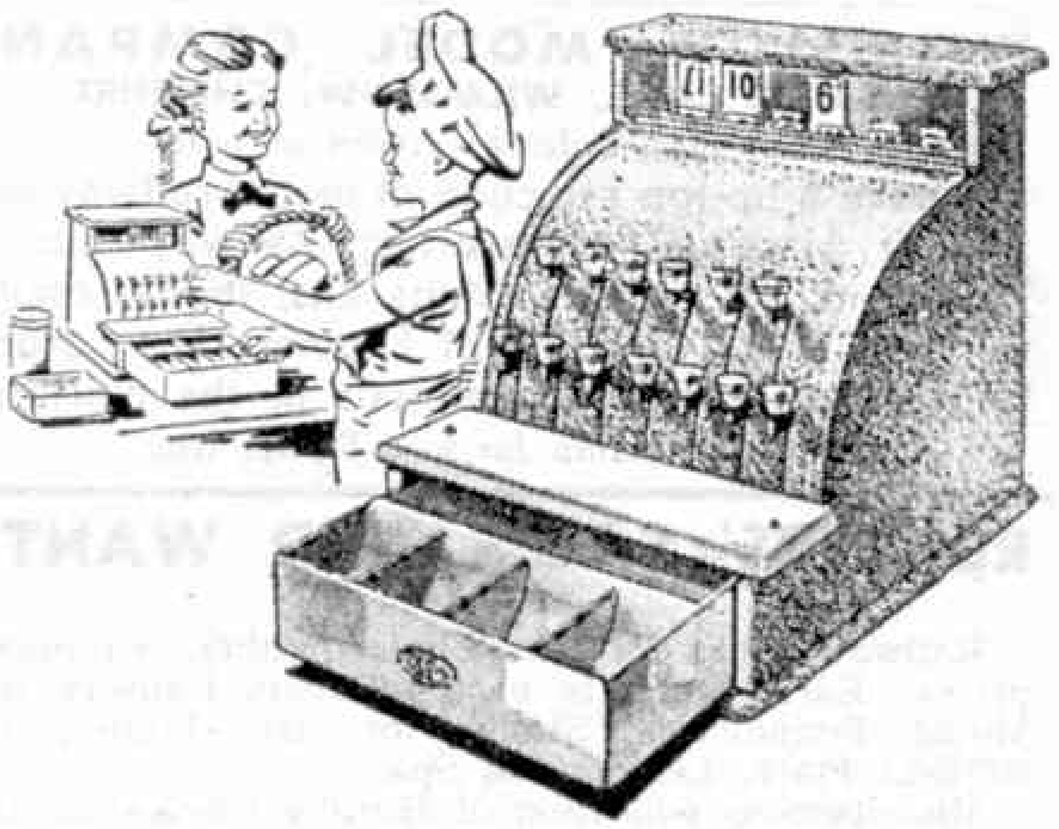

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Dublo Electric Rails and Points in good condition. State price.—Place, 19, Christchurch Road, Norwich.

"M.M.s"—January, February 1941; September 1947; state price.—Church, "Hillside," New Century Road, Laindon, Essex.

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Dublo, Marklin, Trix, Rolling Stock, Accessories.—Wheeler, 51, St. Margaret's Road, London S.E.4.

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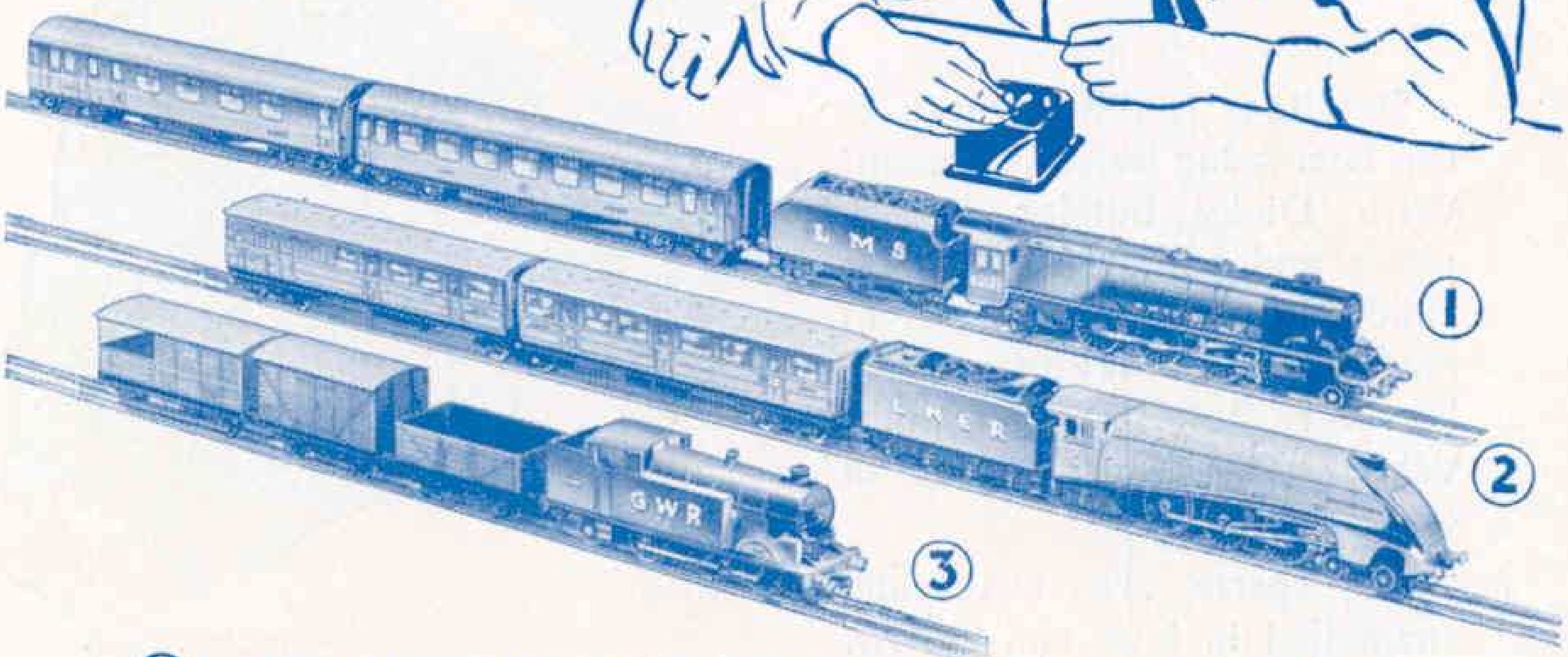

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